PC Answers

PRACTICAL SOLUTIONS FOR A BETTER PC

The **pain-free** way to...

REINSTALL WINDOWS

» Back up & Prepare » Format & Install » Patch & Secure

SEEMS PHISHY

Stop! Before you click that link, is your email all it seems? **p105**

FEATURE

HOW NOT TO BE SACKED

Nobody will mind you booking your next holiday online, right? Think again! We reveal the top ways to lose your job **p14**

BOOST FIREFOX WITH ADD-ONS

Block adverts, add a spell checker, manage downloads and much more... **p61**

STEP-BY-STEP

PAINFUL MEMORY?

Upgrading your machine isn't always as easy as you think **p120**

CDs missing? Contact your retailer

25 Internet safety tips

We show you the best ways to protect your family and wallet online **p20**

UNDERSTAND WHAT MAKES XP CRASH **p62**

Detect, find and kill spyware!

The top signs that your PC is suffering from malware **p106**

GIVE XP A CLEAN OUT
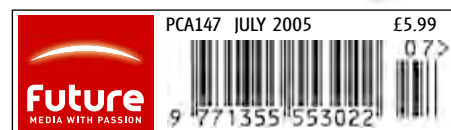
Manually remove stubborn programs

EXCLUSIVE REVIEW

DUAL-CORE CPUs

The latest AMD and Intel processors go head-to-head

Welcome to
PCAnswers

A recent survey by AOL revealed that one in 20 British computer users had lost money as a result of a scam email (phishing). Half of the respondents also said that they'd received some sort of phishing email. In many cases, those that lost money through such scam emails found it difficult to get a refund from their bank. But is it really fair to blame the banks, eBay or PayPal for these losses? How much more can these institutions do to protect the consumer? This is a debate that will run for some time. Confidence tricksters have operated in a variety of forms since records began – all they've done is adapt to the latest technology – and they all operate on the same basic principle, gaining your trust and working in such a manner that your instinct is to act first and think later. There are times when I've nearly been caught out by a well-written email, but I've developed a healthy paranoia over time and always double and triple check any email asking for personal details. I even avoid most registration pages on Web sites – after all, who knows where that data may end up? Hopefully, our new Scam of the Month page will help you to avoid being scammed and we'd like you to send us any phishing emails you receive; we may even use them in the magazine.

Finally, we're constantly striving to improve PC Answers and to this end have set up a reader panel. If you'd like to be involved and help shape the magazine's future, log onto the forum at **http://forum.pcanswers.co.uk** to find out more.

PCAnswers' guarantee

Every issue of **PCAnswers** promises to bring you the best value for money with:

- **Technical help and solutions to your problems**
- **Hardware upgrade advice for your PC**
- **Practical projects and tutorials for you to try**
- **The best software on our cover CDs**

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- We regret that we cannot answer technical queries over the phone. Technical questions can be answered on our forum.

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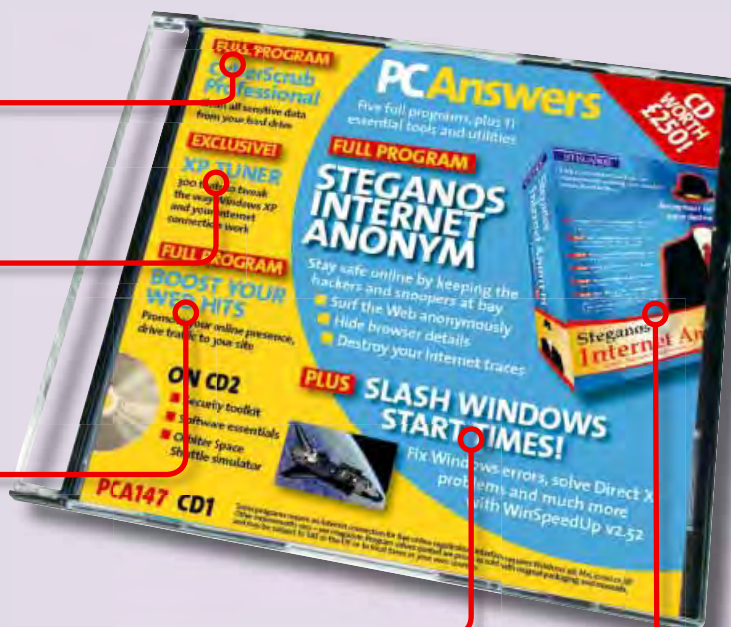
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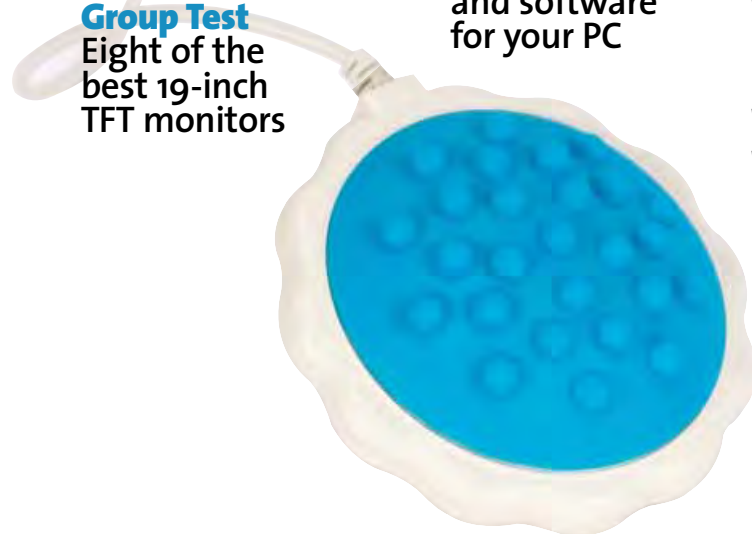
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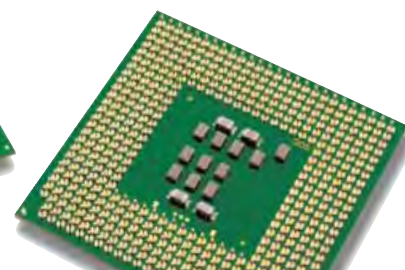
WHAT'S HAPPENING IN THE WORLD OF PCs?

Newsflash

We track down the news stories that matter to you

The long road to Longhorn

Microsoft steps up a gear, but is Apple already in the fast lane?

Windows XP is the start of everything on your PC, according to a new marketing campaign from Microsoft. A strange strategy for a product that is three years old and a year before the release of its replacement. But then that's if Longhorn (the next Microsoft OS) ever arrives.

At the recent WinHEC conference in Seattle Bill Gates showed off some key features of the new Longhorn OS, but they were much reduced from earlier expectations.

Where, for example, is the information-packed Sidebar that was pictured in many concept shots of the OS? Indigo, the Web services section, has been cut back while Avalon, the new graphics technology is actually being ported back to Windows XP,

and will feature in future updates.

Mention was made of Longhorn's enhanced security features – very relevant in the current climate. This would involve encryption chips that are actually part of a PC, rather than as software on a hard drive. This isn't new technology, but Microsoft's 'endorsement' would make it available to 90 per cent of the world's PCs and should have a significant effect on global PC security.

Other features include a much-improved desktop search facility that although is less ambitious than initially promised, is certainly an improvement over the one in Windows XP. The use of keywords that are

associated with files is instrumental to the OS filing system. The enhanced graphical interface is going to be 3D, although this will depend on your PC's specs. Ideally, you'll need a dual-core processor, fast graphics card and 1GB of memory to get the most out of the interface, but a 1GHz processor, a standard graphics card and as little as 128MB of RAM should be enough to get Longhorn running. Tantalisingly, Bill Gates said that a beta version of Longhorn will be out by the summer.

In contrast, Apple's Tiger, which the company is calling 'the world's most advanced Operating System' is already in the shops. Its desktop search feature, Spotlight, can route out files

based on their names, when they were last used or even using words within a file. The eye-catching look of the OS is well established, but improving the look of the desktop landscape is Dashboard. These mini-apps run in the background and are designed to help with the small tasks that we use our computers for, such as checking the weather or contacting directory enquiries.

These and other features indicate that although Microsoft supplies the more popular OS, Apple is behind the most innovative. There's also the question of whether PC users should upgrade to Longhorn in the first place with the effort and expense that this task involves, or whether they're better off sticking to the well-established, well-documented Windows XP.
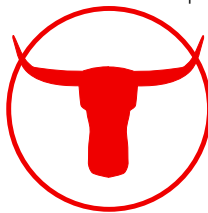
Tiger already ships with a number of features that are destined to appear in Longhorn. Expect the Longhorn desktop to have a similar look and feel to the Tiger desktop, with similar visual previews of files, for instance. The 3D look and feel of the windows will also be very similar to the existing OS X system.

Tiger's Spotlight search tool produces lightening fast system-wide searches, looking in the meta data of each file as well as inside PDF files. Microsoft has had to strip a similar search feature out of Longhorn in order for it to hit it's shipping date of Q4 2006, but a similar search tool is expected to be added by one of the inevitable Longhorn service packs.

The most important feature of Tiger is hidden under the surface though: it's the 64-bit processing technology that will also feature in Longhorn. While that won't speed up the current crop of applications it's going to do wonders for HD video and 3D rendering programs of the future.

In essence, Apple has produced a 64-bit operating system a year before Microsoft. And the final irony is that Microsoft's 'It just works' slogan is based on one used way back by Apple...

Graham Barlow, Editor, Mac Format

Saying Tiger is better than Longhorn is pointless – you're comparing a product that's on the shelves now with something that's not even in beta yet and won't be available for another year and a half. We won't even see the user interface before 2006, and it could have had all sorts of features added by then.

That said, the current feature list is looking really interesting. Longhorn still has an integrated search tool that can find anything instantly; it just doesn't use WinFS. The way things look and are organised is a big improvement and you probably won't have to defragment your hard disk again. Everything from installation to common tasks like DVD watching will be easier. Security and wireless networking will see some massive improvements and it's stuffed with new troubleshooting features.

In the meantime Windows XP is a great OS that's getting new features added to it all the time – including, incidentally, 64-bit support which can be had as a free upgrade, rather than using Apple's tactic of making you pay for a new OS.

Jon Hicks, Deputy Editor
Windows XP: The Official Magazine

Musical mobile

Music stored on phones is nothing new, but Nokia has taken steps to eliminate storage limitations and poor sound quality with its latest product, the N91. A 4GB hard drive means up to 3,000 song capacity, bringing the N91 into hallowed iPod territory.

Critical flaws found within Firefox

The more exposure a product has to the general public, the greater the chance of a design fault coming to light. In this case there was not one, but two 'extremely critical' JavaScript-based flaws found in *Firefox* that would enable Web sites controlled by hackers to run code on your PC. Several security firms contacted the Mozilla Foundation with details of the two flaws. The first permits malicious code to be installed on a PC, while giving *Firefox* the impression that it's coming from a safe Web site, such as **addons. update.mozilla.org**. The second is a defective verification stage that occurs when the installation process begins. Web sites containing JavaScript code pass under the radar, giving the green light to potential malicious code. An imminent *Firefox 1.0.4* should clamp down on the flaws.

Washington acknowledges spyware threat

Webroot CEO spells out online dangers to US Senate

When Capitol Hill casts its gaze over the threat of spyware, the cyber criminals better sit up and take notice

The global struggle against spyware took a significant step forward when the head of Webroot Software testified in front of the US Senate over the threat of spyware. Webroot is the leading company that provides anti-spyware and other security solutions for the consumer and business market, and so C. David Moll, the CEO of Webroot, was well placed to spell out the dangers. The Washington D.C. hearing concentrated on the damaging effects of spyware, how it can be fought using software solutions, and the role that legislation, regulatory bodies and law enforcement staff have to play in the fight.

In a stark statement accompanying his testimony, Moll said that 'Spyware and its ability to access a user's machine, without informed consent, for financial gain is an epidemic that threatens the viability of the Internet as a commercial, entertainment, communications and educational tool.' No arguments from us on that score.

The Internet was also on the legal agenda elsewhere in America. In Massachusetts the state attorney filed a lawsuit against the one of the world's largest spam gangs. A mere seven people were allegedly responsible for sending out millions of emails, directing recipients to sites selling porn, pills and pirated software. An emergency court order shut down the network of Web sites run by the spammers.

On the 'lighter' side of PC annoyances, it was found that PC viruses can't make the jump from a mobile phone to a car's communication system. F-Secure, a Finnish security firm, ran tests on cars from the Lexus range following reports that some Lexus Landcruisers were vulnerable to electronic infections that are transmitted via Bluetooth.

BYTE SIZE
Snippets from the realm of computing

Yahoo! gets personal
Now's your chance to shrink the Internet, with Yahoo!'s My Web search engine. This tool enables you to save favourite pages, search results and search history to the program, before sharing the information with friends. This unique archive will result in the Web providing the information that matters most to the individual. About time, too.

Adobe expands
The company behind such high-profile products such as *Photoshop*, *Acrobat* and *Premier* has acquired Macromedia in a deal worth a whopping $3.4 billion. This means that Adobe will have even more presence in the Web and multimedia market, as well as being able to make in-roads into the mobile and business sectors.

Alien-wow!
Has the world gone Star Wars crazy? Alienware has: it's produced two themed systems. Your choice of case will depend on whether you like to uphold intergalactic law wearing an old karate suit, or dress in black while breathing through an aqualung.

Inbox

Seen something in this magazine that's helped you, or made you angry? Let us know! Your thoughts are worth money!

£50 STAR LETTER

WHY FREE CAN BE BETTER

Having read May's addition of **PCA**, the star letter reminded me of how vulnerable we can be to viruses. I've been lucky as I've only been infected once by a virus, two years ago. Recently, I was watching the TV when my 17-year-old daughter shouted 'Daaad, what's this?' I knew from the tone of the voice and the extended Dad that something was wrong! *Avast* had detected a virus. I transferred the infected file into the vault, from where I was able to gain enough information to be able to quiz the Symantec and Trend Web sites for further information, and deleted the file. Luckily, *Avast* had stopped the virus dead before it was able to infect my computer.

The frightening part is that my daughter was convinced that *Avast* was wrong because, 'the file was only a picture sent by my friend using *MSN*'. I had to explain to my daughter that her friend was probably unaware that this file had been sent and unaware that his PC was infected. The virus turned out to be a new worm only detected a few days earlier and a quick phone call confirmed that a virus had disabled my daughter's friend's computer and he could no longer connect to the Internet. He told us that he had *Norton* installed and was up to date with the definitions, but the virus still got through.

The moral of the story is that it seems you can't always rely on the big-name anti-virus software and you certainly can't insure against a teenager's loyalty to their friends. My daughter would rather trust a friend than an anti-virus program. Maybe not any more! It also shows how important common sense is, and to check the extensions of any attachments received.
Stephen Wright

We're glad to hear that *Avast* can still show up the big boys! Your email is a timely reminder that even attachments from friends and family can contain a deadly payload, and should always be checked before opening. Last month, we courted controversy by asking if you could survive without AV protection – your experience backs up our assertion that you can't.
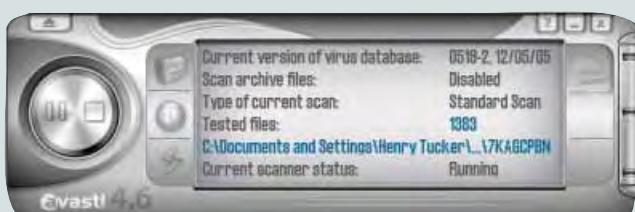
In many cases, free anti-virus can be better than the market leaders

No protection?

I have subscribed to **PCA** for several years and am indebted to the advice on the forum and from articles written by Caroline Lyons on the layers I need on my computer for virus/Trojan/spyware/malware-free computing. I wouldn't be so keen to set up security on mine and my friends' PCs without the in-depth knowledge I've gained from the magazine, forum and Caroline in particular.

I can't go any further in my current issue (June) than the 'New Feature' by Dan DiNicolo, as I am totally and utterly shocked by this 'advice': 'If you should choose to go without AV software...' I shudder at the very thought of even missing an update, never mind someone hacking into **PCA** to go against what has always been maintained on the forum and in the magazine about the utmost importance of 'layered security'.

I know this couldn't be true and it's not possible that **PCA** has issued this article in its magazine. I know typing errors can occur, but this is one that I feel **PCA** will need to rectify ASAP with solid security warnings about the dangers of running without an AV (viruses do not just arrive by e-mail!).

I've recently been questioned myself by friends about the need for anti-virus when an ISP scans email, etc. Needless to say, my security advice (from **PCA** and the forum) had me in no doubt how to answer the questions. I shudder to think what my friends who are completely new to computing would think if they read that issue of **PCA**. Surely this is only my copy that has been hacked and not a universal article to be read by those who follow avidly the advice given in (the once-respected) **PCA**?

I'll seriously have to re-consider my subscription and will certainly not be recommending the magazine as a next step to any of my new-to-computer friends unless **PCA** can rectify this one huge mistake. A very disappointed and totally shocked long-time subscriber to **PCA**.
Beverly

The point of the article was to be contentious and make people think about the various security issues. While Dan DiNicolo did pose the idea of running without any AV protection, the article went on to summarise that you can't survive without any AV protection and that in fact, this protection should be backed up with a firewall and other security tools. While we understand that there is some risk of people not reading any further than that sentence, we're of the opinion that these are the type of people who will never secure their PCs, because they don't see why they should. Hopefully, our continuing security coverage on areas such as port blocking, spotting the signs of spyware and why you need a firewall this issue will convince you that we've not gone off the rails!

It's not rocket science, or is it?

Reading your latest run of articles about Linux seriously made me think about the possibility of trying the project myself. However, April's issue made me start to think twice, as you went further into the nuts and bolts and I've chickened out at the moment. Yet my courage could be strengthening. It's been brought home to me how program makers are becoming entwined with XP and *Internet Explorer*. The latest software coming from McAfee and Symantec requires the machine to be running Microsoft .NET

Framework, which also means *Internet Explorer*, unless you know of a way around the problem. Both of these manufacturers are often recommended by the magazine, and it could be an expensive mistake to make if, unknowingly, the latest software is suddenly not compatible with certain machines. I operate with *Firefox* and *Thunderbird*, with all traces of *IE* removed by using *XPLite* and I don't wish to have to reinstall *IE* – no doubt I'm not alone in this.

Perhaps it may be judicial on your behalf to advise of these changes when you review software in the future, because it must be going to be a normal thing, judging from what Microsoft say on the download page for .NET.
Les Hill

We have had a number of letters regarding Linux and as a result of this we'll be trying to make it more accessible in upcoming issues, as it appears it's been rather over complicated.

On the subject of .NET, we're also concerned about the integration of this technology into so many other products. It's not that we have a problem with it, per se, but it's utilising a browser platform that's about as secure as a chocolate padlock. Technology marches on of course and Microsoft is determined to travel this particular road, but we will be re-evaluating how we score some of the products that rely on the .NET framework.

✉ Correction for PCA
In the latest issue of **PCAnswers** you mention that *Spybot* doesn't have an auto-update feature, when

in fact there is an option to set this up. If you go into advanced settings there are various options to do this. I've set mine up to auto update on start of the program. Also, I've set a scheduled run for each night and by doing this I effectively auto update every day. Even without scanning every day, by setting the auto update on start it ensures the scan database is always up to date before I run a scan. Great mag.
Dave Lake

Apologies for the incorrect information; while we strive to be as accurate as possible, even we get it wrong sometimes. Thanks for alerting us to the correct way of updating and we'll ensure we include this information next time.

✉ What's wrong with this picture?
This week was the first time I bought a PC magazine in about five years and I must say that your magazine was a refreshing change. Clearly laid out and easy to read. Shame about your QA department! On pages 38/39 in the May issue, you talk about hooking up the line-out of the TV tuner to the line-in on your soundcard. This would be fine, but the picture (below) doesn't show any other connectors on the TV card apart from the coax connector! Just thought it was amusing.
Rob Powell

Ah, well you see on this particular card, there are internal connections for the soundcard. Probably. In actual fact, we had to use a different card for photography than was used by the author, but we can see how this is a bit confusing!

Can you spot the deliberate mistake?

✉ Foxholes
I am a long time reader of **PCAnswers** and have always found your advice useful, but I have a question now about some of the recent publicity for *Firefox*. I followed your advice and installed it as my default browser and have had good results in general, even though there are some sites which are not geared up to *Firefox* and will only work properly with *IE*. It seemed that your advice regarding security of *Firefox* made it a worthwhile choice.

Today I've been reading an article in *Information Week*. It says that while *Firefox* is a good alternative, it actually has more security holes than *IE*, as shown by US-CERT, and that as more and more people switch to *Firefox* so hackers will attack its holes. Would you like to comment on this? Keep up the good work.
Ian Cooper

The article you linked to had either been removed or was missing, as we couldn't load it, but we'd take issue with the claim that *Firefox* has more security holes. We've always said that while *Firefox* was more secure than *IE*, it's far from 100 per cent secure, as nothing ever is. However, the crucial difference is that whenever flaws are

Can't fathom the UK's bizarre system of measurements? Don't tie yourself in knots, relax and have a pint instead!

This IS the UK, we speak ENGLISH here, and we measure distances in FEET, YARDS, MILES, etc. Please remember that we are NOT in France...
Arthur Dungate (I am NOT French...)

Are you also annoyed that we print prices in this new-fangled pounds and pence nonsense, instead of crowns and shillings? We're certainly not ashamed of being British, although as **PCAnswers** is sold in a wide range

LET'S INVENT A NEW MEASUREMENT FOR HARD DRIVE CAPACITY, BASED ON AN ARCHAIC UNIT SUCH AS THE CUBIT

found in *Firefox*, a fix is usually issued in a matter of days, rather than weeks, or even months with *IE*. We'd rather use an open-source browser that has a team of people actively maintaining it, than one from a monopolist that is only updated when it starts to lose large chunks of market share.

✉ We are not in France
I have subscribed to **PCAnswers** for many years, but am getting dissatisfied with an aspect that's all too common these days. This is the apparent love you people have for using foreign designations for things, instead of British ones. Are you ashamed of things British?

In the current issue, May 2005, an example is on page 102 in the Elonex review. The reviewer, in his text, says that 'you need to be at least two metres away...'.

of countries, from Iceland to Malta, we like to think it's an international magazine. It's ironic really, that in colonial times it was quite acceptable for England to force its language, laws and system of measurements on everyone else, but you feel that we now shouldn't adopt international standards. In case you hadn't noticed, the world map is no longer mainly coloured red and the UK has been teaching metric measurements in schools for 34 years. Do you really see an advantage in using feet and inches when the rest of the world, bar the USA, uses metric? Maybe we should return to the dark ages and start using Whitworth again, and measure distance in chains and furlongs? Better still, let's invent a new measurement for hard drive capacity, based on an archaic unit of measurement such as the cubit. We're sure it'll catch on...

TIME TO DUAL
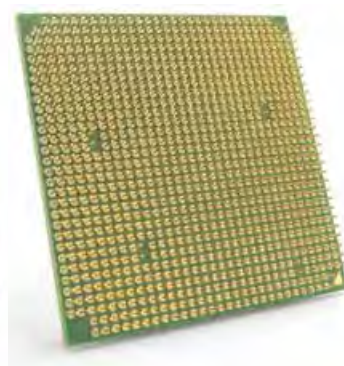
Why have one CPU doing all the hard work inside your PC when you can have two? Jeremy Laird tests the latest CPU architecture from AMD and Intel

Dual-core PC processing has arrived, and not a moment too soon. After decades of relentless – even ruthless – progress, the single-core approach to engineering PC processors has run out of steam. Intel's baking-hot, Netburst-powered Pentium 4 CPU is as good as burnt out and even arch-rival AMD, with its lower-clocking, cooler-running K8 architecture, has conceded that the game will soon be up for single-core processors. So the future's bright, the future's multi-core, right?

like it was phoned in from the designers at the very last minute. So how has AMD pulled off this remarkable feat?

Intel inside

Although based on a brand new processor die, codenamed Smithfield, the inner workings of Intel's first dual-core chip are not exactly novel. Best thought of as a pair of standard Prescott-trim Pentium 4 CPU cores squeezed onto a single slice of silicon, it's based on the same 90nm

SO THE FUTURE'S BRIGHT, THE FUTURE'S MULTI-CORE, RIGHT? IF ONLY IT WAS THAT SIMPLE

If only it was that simple. Granted, with the first dual-core unveiled this month we've surely entered a brave new world of pervasive multi-core processing. That's not hype. On paper, the advantage these dual-core chips have over existing CPUs is obvious enough: twice your current processing power in a single package. Yet in practice it's much more complicated than that.

Showdown

With two architectures finally here, we thought it'd only be right to put the two head to head and find out which one is best. If you're a fan of Intel you may want to look away now for it seems AMD has once again stolen a march. Put simply, we think AMD's efficient and elegant dual-core architecture makes Intel's effort look

manufacturing process technology, boasts a carbon copy feature-set and uses Intel's existing LGA775 socket and CPU packaging. That's as fancy as Intel's first delivery for the dual-core platform gets.

As the world's largest chipmaker with a vast array of multi-core projects on the boil (15 at last count), you might expect some high-tech, low-latency on-chip inter-core communications technology... and you'd be wrong. Although both cores are integrated onto a single die, they share no on-chip circuitry or resources. Just like Intel's current single-core platforms, there's a single front-side bus running at 200MHz (quad pumped for an effective frequency of 800Mhz), handled by a discreet Northbridge chip that delivers system memory and I/O

→ BENCHMARK RESULTS

	AMD Athlon X2 4800+	Intel Pentium D 840 Extreme Edition
DVD2AVI MPEG2 to MPEG4 (time)	1:07	1:16
iTunes WAV to MP3 (time)	1:31	1:41
Windows Media Encoder HD to DVD (time)	2:17	2:55
Doom 3 (fps)	105	89
Video encode + virus scan (time)	2:44	3:30
Sciencemark 2.0 memory bandwidth (MB/s)	5,353	4,502

In order to test which CPU was best we ran a number of different tests. The majority of them involved timing the systems as they completed various tasks such as encoding files, and running anti-virus scans. Sciencemark 2.0 (www.sciencemark.org) is a benchmark that tests real-world system performance and demands
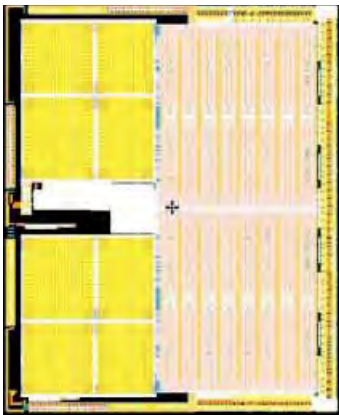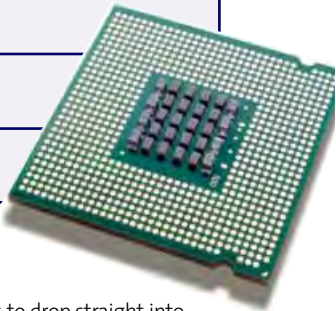
Dual-core processing has finally arrived on our PC shores, but that's only the beginning

communications to both cores. As with a dual-processor Xeon server or workstation platform, all inter-core communications, including those involving cache memory coherency, are handled off the CPU package by the Northbridge chip.

As well as providing a platform for the dual-core Pentium family (the 915 and 925 chipsets are not compatible, despite sporting the same LGA775 socket), the new 955X Express chipset also adds support for 8GB of dual channel DDR2 memory, running at 667MHz, an uprated disk controller with SATA 2 and RAID in 0, 1, 5 and 10 configurations and dual PCI-Express x16 graphics ports.

Yet how does Intel's HyperThreading technology, designed to improve multi-threaded performance, fit into this new multi-core CPU design era? Well, Intel would argue that if running two threads simultaneously on a dual-core CPU

is great, running four on a HyperThreaded dual-core chip is even better. So, HyperThreading lives on, but only in this initial high-end Extreme Edition chip, for now.

As for operating frequencies, the Extreme Edition 840 D and the plain vanilla 840 D both clock in at 3.2GHz, while the 830 and 820 run at 3.0GHz and 2.8GHz, respectively. That's not hugely impressive for an architecture built for pure clock-speed. However, the implications in terms of heat dissipation and power consumption of cramming two 90nm Prescott cores on a single silicon die are challenging, to say the least. The highest clocking single-core Intel CPU, the Pentium 4 570 3.8GHz, has a Thermal Design Power (TDP) rating of 115 watts. The new Extreme Edition beast trumps that with a frightening 130 watt TDP.

Pricing, meanwhile, for the entire range has yet to be announced, but it's rumoured that the Extreme Edition can be yours for around £550 and the Pentium Ds will range from around £150 to £300.

AMD's offering
To counter the launch of the new Extreme Edition Pentiums, AMD has now launched its desktop dual-core chip, the 64 X2. To see how well this fared against what Intel has to offer we tested an Athlon 64 X2 4800+ that runs at 2.4GHz, with 1MB of L2 cache. In addition to this it also has 64K of L1 instruction and 64K of L1 data cache per core as well.

While the P4 hit a thermal wall at 90nm, AMD's single-core K8 processors

in 90nm trim actually run cooler and use less power than their 130nm progenitors. This is a boon when you're trying to squeeze two power-hungry CPUs cores into the space previously occupied by one. It has allowed AMD, for instance, to specify its entire range of 90nm dual-core processors within the same thermal envelopes as its existing single-core chips, and at the same time achieve that relatively small 200MHz clock-speed delta. The 2.4GHz Athlon 64 X2 even matches the 110 watt rating of the FX-55. It's worth remembering, however, that Intel and AMD measure thermal ratings differently, so these figures are not directly comparable with the Pentium Extreme Edition 840 D's 130 watt TDP.

This is followed up by the K8's integrated memory controller and HyperTransport I/O interface. It's these technologies that enable AMD to claim the K8 has had multi-core at its heart from the very beginning and it delivers two key benefits. In simple terms, AMD has carried over the integrated memory controller and HyperTransport I/O from the K8 intact for its dual-core processors. There's no support for new-fangled DDR2 memory, its tried-and-tested dual channel DDR memory at up to 400MHz. The other benefit of this carry-over approach is that it enables the new dual-core Athlons

and Opterons to drop straight into existing 939 and 940 socket motherboards, the only requirement being a BIOS update.

The end for Intel…?
So it's first blood, both on paper and in the benchmarks, to AMD's dual-core processors, then? Yes, but that's not the end of this story. There's a long way to go before the desktop software environment catches up with multi-core hardware.

The game is far from over for Intel. The company has huge resources, both financially and in terms of research and design capabilities. Smithfield may be as basic as single-core architectures can get, but it's only the first dual-core CPU from Intel. Later this year we're likely to see Yonah, the dual-core revision of its crushingly successful Pentium-M mobile processor. It's a very advanced design complete with 2MB of shared cache memory

Meanwhile, back on the desktop, Intel has a raft of new dual-core chips lining up. Early next year, Dempsey and Paxville, both dual-core Xeon CPUs backed by powerful new chipset platforms, will appear. Furthermore, before summer 2006 arrives they'll be followed by Presler, the first 65nm dual-core desktop CPU. Strap yourself in tightly, we're set for an exciting ride over the next 12 months. ■

HOW NOT TO BE SACKED

You've spent several happy hours online – browsing and emailing – and a little bit of time doing work. **Mike Williams** looks at what happens when Internet use at the workplace goes just a little too far

You could take an online training course, sign up with a recruitment consultant, visit a job search engine or put a CV on your Web site: yes, the Internet is a great way to find a new job.

Don't become too complacent, though. What the Web gives, it can also take away, and careless online activities can just as easily end a career as start one. Former Downing Street press chief Alastair Campbell made the news earlier this year, for instance, when he accidentally sent an email to a BBC journalist suggesting they should 'F*** off and cover something important, you tw**s'. Robert Kilroy-Silk's secretary was similarly accident-prone one day, when emailing his column to the *Sunday Express*. She sent the infamous anti-Arab piece, and he was forced to leave the BBC within weeks.

No such confusion at the Royal and Sun Alliance in 2001, where staff knew exactly what they were doing. Unfortunately, it involved circulating material where cartoon characters were pictured in compromising positions. Bosses were not amused and the ten people who were fired

(and 77 suspended) probably didn't see the joke either.

Can't believe anything like this could happen to you? Then keep reading. You're going to be surprised.

Clear your tracks

The simplest way to lose your job is not to do it. At least, not very often. Employers have this idea that if they pay you to work for them, that's what you should be doing – spending your time browsing the Web or watching eBay instead isn't exactly going to advance your career.

This is no secret, of course, so many people spend a great deal of time trying to hide their extra-curricular surfing. In *Internet Explorer* this process starts at Tools -> Internet Options, with the options to delete your cookies, Temporary Internet Files and History. Then click Content -> AutoComplete, and select Clear Forms and Clear Passwords to erase any form-related data.

It can be a tediously slow process, but once all the files are deleted you can feel safe – although maybe you shouldn't. Think about it: if anyone ever really does check *Internet Explorer*

to see what you're doing, they'll want to see visits to a host of work-related sites, perhaps with occasional stops at sober, respectable places such as **http://news.bbc.co.uk** to show that you're keeping up with current affairs. Yet your browser history will be permanently blank, showing no signs of ever being used at all. That's an instantly suspicious red flag.

However, if you're accessing the Web through a network connection, then there's much worse to come. Your company could easily install software to record exactly what sites all its users are visiting and notify them of interesting bandwidth-related facts (such as who's spent the past two days downloading 5GB of video from *Harry's House of Whores*). You'll never know they're on to you until your manager requests a meeting and by then it'll be too late.

Stopping spyware

What if you're not the type to spend hours playing around on company time? What if you spend a great deal of your own time locating and installing software that might help with your job? Very creditable, but will

*Is your company taking Internet and email monitoring too far? The Information Commissioner site has more on your right to privacy (**www.informationcommissioner.gov.uk**)*

it win the approval of your boss? Not necessarily. You might think you're being helpful by downloading what looks like a great PDF file convertor, for example, but if it contains a spyware component your company won't be so pleased. Especially if, now it's through the company firewall, the spyware can infect your whole network.

This is more likely than you might think, too. In February 2005 security specialists Webroot audited more than 11,000 corporate PCs, and found that 14.46 per cent had system monitors, while 9.14 per cent included a Trojan (**www.webroot.com/ company/pressreleases/20050215-spyware**). Whether you'd be blamed for an infection like this is open to question. If it's a clear failure of your company anti-virus software (or

that I must use the company network legally and responsibly', but this doesn't really help. If the boss decides it was irresponsible for you to download and install the software that lead to the infection, then the consequences are still all your fault. Annoying, but that's not all, there's still another software issue to consider.

Beware the user license

It's probably safe to say that most home users don't care much about software licensing. 'So what if my kids install a copy of *Word* from my discs to use for homework', runs the argument. 'I'd never buy a separate copy for them anyway, so Microsoft haven't lost anything'. This isn't a defence you'd like to rely on in court, but it's certainly true that most

LOCATING AND INSTALLING SOFTWARE THAT MIGHT HELP WITH YOUR JOB MAY NOT WIN THE APPROVAL OF YOUR BOSS

maybe a new Trojan that's not been discovered yet), for example, then you'll probably be safe.

On the other hand, your contract of employment (or company Acceptable Use Policy for PCs) probably puts the responsibility firmly on you to prevent virus infections. The typical example is very specific ('employees must not install, uninstall or update software...'), so there's really no room for argument. It doesn't matter that the anti-virus software missed it – it's your fault for downloading something in the first place.

Other companies take a more vague approach, such as 'I acknowledge

software companies see no benefit in pursuing small, one-off infringements by the average home user.

Businesses, though? Just about everyone would agree that's a very different story. If a company is gaining some commercial benefit from an application, then they really ought to pay for it, and there's no excuse for breaking the terms of a user license.

In fairness it's not always obvious that you're breaking the rules. You might have come across the excellent graphics viewer *IrfanView* (**www. irfanview.com**) on a magazine cover disc, for example, and now everyone in your company has a copy. Fair enough,

everyone knows it's freeware. However, visit the site and you'll find *IrfanView* is only free for non-commercial use. When installed by a company, you're required to pay $12 per copy, per license (with discounts for quantity). There are many, many other top programs that are freeware for home users only – how many are running in your company?

The complications continue with regular commercial software, perhaps with users installing apps on their laptop, work and home PCs. Does the license allow this? Probably not. It certainly won't permit several people 'borrowing' the master discs for an application to install a copy for themselves, but this is an easy way software can spread. It's probably one reason why the International Data Corporation have estimated that 29 per cent of business software in the UK is illegal

THERE'S A £10,000 REWARD FOR SHOPPING THE SERIOUS OFFENDERS

(**www.bsa.org/uk/press/ newsreleases/Major-IDC-Research-Study-Finds-29-Percent-of-Software-in-Use-in-UK-Is-Pirated.cfm**).

*Ellen Simonetti lost her job as a flight attendant after publishing 'inappropriate' photos on her blog. Go to **http://queenofsky.journalspace.com**, to find out more*

Using illegal software on your work PC can end up with your company fined and you sacked, so it pays to check your system right now. If you're a manager in a large company it's even more important. Of course, some people assume they'll never be found

out, but then they probably don't know that the Business Software Alliance offers up to a £10,000 reward for anyone who shops the most serious offenders (**www.bsa.org/uk/ report**). Still feeling safe?

Email disasters
If you really want to create a fuss, then nothing beats an email, as Claire Swire knows very well. She sent a racy email to her boyfriend, Bradley Chait,

Big brother

Is the boss watching your every move?

Many companies in the UK are concerned about employees misusing the corporate email system, and a recent survey suggested they might have a point. Security company Clearswift surveyed 4,500 people in the UK, Germany and the US and discovered that 40 per cent spend an hour or more every day on personal emails.

As Clearswift CEO David Guyatt pointed out, that soon adds up. 'In a typical 100 person company, the survey shows almost 1,700 working days each year are lost', he said. 'That's equivalent to about seven new full-time staff.'

Consequently, more companies are now installing

software to keep an eye on their workers. This could include anything from a keylogger on your PC, to monitoring your system over the network, watching your bandwidth use or reading your emails. In extreme cases you might also be watched on CCTV, have your phone calls logged, or even recorded, and the company doesn't need your permission to do this.

Super spies
Sneaky? Maybe, but the Data Protection Act covers part of this area, and does say your employer must inform you that the monitoring is going on. They're also not supposed to

*A monitoring tool like **Track4Win** (**www.systracker.com**) will tell employers exactly how you're spending your time, and as it's priced from $39 anyone can afford it. Oh dear*

monitor you in private areas, such as staff toilets, unless there's serious crime involved (such as drug dealing).

Companies should also bear in mind Article 8 of the European Convention of Human Rights, which creates a right to

respect for private and family life, and for correspondence. We wouldn't rely on that as a speedy way of getting your job back, though – it's much easier to cut down on the personal emails in the first place. Can you keep your hands off the keyboard?

'Freeware' doesn't always mean free for commercial use. Some packages, like **IrfanView,** *require payment if they're used in companies, so read the small print during installation*

So how can you avoid getting into trouble at work? A good place to start is by reminding yourself exactly what is and isn't allowed. Find your contract of employment, the company Acceptable Use policy (if you have one) and other relevant documents, such as a staff handbook, and read them. It won't take that long, and could save you a lot of trouble later.

Perhaps the real trick is to keep in mind that you're using the Internet as a representative of your company, during work hours, and not as an individual. As such, virtually everything you do online – visit a site, send an email, download some software – can have serious consequences. So be careful, think about what you're doing, and don't push your luck with too much personal use of the Web during work time. Alternatively, become familiar

which would have been fine if he hadn't forwarded it to a bunch of colleagues. They forwarded it, too, and soon Swire's intimate thoughts were all over the Web. National humiliation was only the beginning though, and the affair soon claimed other casualties. Nine staff at the Financial Services Authority were suspended for forwarding the Swire email to friends outside the organisation. Humourless? No, not really. 'As a regulator, anything we send out can be construed as a regulating document,' said an FSA spokesman. This forces them to adopt very strict email policies, which the staff had breached.

It's easy to innocently run into problems with email. The most

NATIONAL HUMILIATION WAS ONLY THE BEGINNING THOUGH, AND THE AFFAIR SOON CLAIMED OTHER CASUALTIES

common one? Clicking 'Reply to all' by mistake, and sharing your thoughts a little more widely than you'd intended.

with the facilities on offer at **www. jobcentreplus.gov.uk**, because they just might come in useful very soon. ∎

Email rules!
You probably don't work for a national regulator, but most companies still have clearly defined rules about what you can or cannot do via email. Forwarding email chain letters is usually forbidden, for instance, and sending unsolicited email of any kind can be seen as spam. The content of your emails is important, too. Karen Carlucci, a former executive at Oracle Corporation, resigned and took Oracle to an employment tribunal, after discrimination that included a sexist email sent by her boss. She won almost £100,000 compensation.

Anything you send that might seem to be discriminatory, or harassment, could put you in serious trouble. Criticising your company could have the same result (just ask Mark Jens, fired for posting complaints about Google's compensation package. Don't even joke around, in a text-only medium there's no guarantee that everyone will see the funny side.

→ FURTHER INFORMATION

TOP FIVE EMPLOYMENT LAW RESOURCES

Employers News
Read all about the latest newsworthy unfair dismissal or discrimination claims at this simple, hassle-free Web site. There's a free email newsletter as well.
www.employersnews.co.uk

bCentral
This Microsoft site has plenty of useful business information, including articles on employment law, what companies can and can't do in monitoring Internet use and more.
www.bcentral.co.uk

Advice guide
Published by the Citizens Advice Bureau, this excellent Web site has lots of helpful information on your rights, workplace monitoring, and just about everything else you might need if you ever fall into a spot of bother.
www.adviceguide.org.uk

acas
The Advisory, Conciliation, and Arbitration Service has the best Web page on Internet and email policies and workers' rights that you'll find anywhere. Browse

through the rest of the site when you have a chance, for yet more useful information.
www.acas.org.uk/publications/alo6.html

Employment Tribunals Online
Have you lost your job because of supposed Internet misuse, but you're sure that the company was wrong to fire you? Don't give up just yet. Maybe there's a case for unfair dismissal – here's where you can find out.
www.employmenttribunals.gov.uk

CREATE YOUR OWN BLOG

→Join the latest trend – create an online blog and be a modern day Samuel Pepys

STARTS ON PAGE 40

'It's not simply the latest hobby, it's the new way of creating a Web site – providing content in diary form'

HENRY TUCKER
Deputy editor

HENRY'S TIP OF THE MONTH

Don't clutter your desktop with unnecessary icons, files and folders. Not only does it make it hard to find things, but Windows has to refresh the images every time, therefore slowing your overall system down, particularly if you're running Windows 9x.

COMPLETE GUIDE

Online shopping is the source of many a bargain. However, tread wisely as you could be out of pocket if you're not careful. Our complete guide has everything you need to know   **PAGE 32**

JULY 2005

Stay safe when online

25 TIPS

Christian Harris urges you to take suitable precautions when surfing the Web
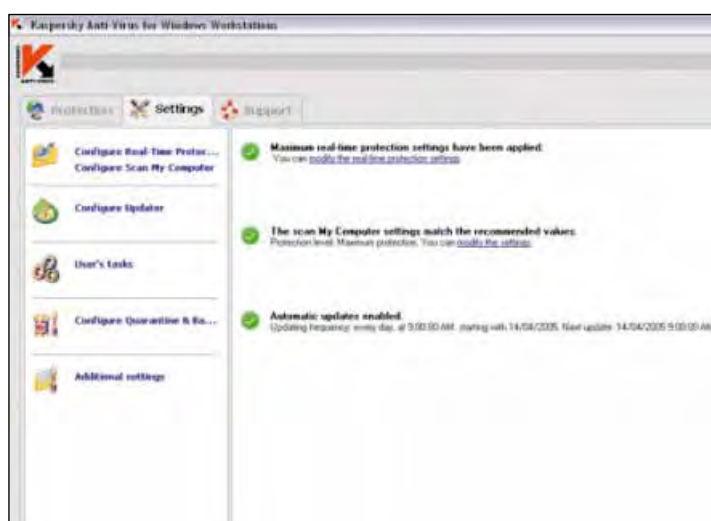
Kaspersky Anti-Virus for Windows Workstation *is one of the best anti-virus packages*

If you listen to the media, you'll have heard about hackers and viruses. Yet unless your computer has been targeted by one, you may not know how they could affect you. If your PC is attacked by a hacker or virus, you could lose important personal information or software stored on your hard disk drive. Even worse, your computer could be used without your knowledge to attack other PCs, including those that protect your family or business.

The best protection against hackers and viruses is your personal commitment to online safety. If you use a high-speed connection to access the Internet, you can take precautions to better protect your time, the information on your PC and the security of your company's networks.

01 STOP VIRUSES

Install anti-virus software on your computer. This is a no-brainer in today's computing environment, but with new viruses emerging daily such AV programs need regular updates – like annual flu shots – to recognise these new viruses. Make sure your AV software's database is up-to-date by configuring it to automatically update at least once a day. Run a full scan at least once a week too, just to be sure. Furthermore, check with the Web site of your AV software company to see some sample descriptions of viruses.

02 TAKE YOUR TIME

Turn off the PC if you feel uncomfortable with what you're seeing on the screen. Remember that you're always in control: don't feel pressured to click or enter any details unless you're absolutely sure what you're doing. If you come across something that doesn't seem right, take a breather and come back to it in a few minutes. For instance, you may be presented with a screen that asks for personal

→STEP-BY-STEP GUIDE

Strengthen Internet Explorer's security

Worried about drive-by downloads and spyware? Then it's time to secure Microsoft's vulnerable browser

01 Ensure that you have the latest version of *Internet Explorer* (version 6.0) and that all necessary patches and updates have been applied. To obtain the latest version and required updates, visit the Windows Update Center (**http://windowsupdate.microsoft.com**). The Microsoft Windows Update Consumer site provides critical updates, security fixes and software downloads.

02 Next, configure *IE's* Security Zones: choose Tools -> Internet Options and click the Security tab. *IE* provides four security zones, each of which can be configured to provide custom protection for safer and more pleasant Internet browsing. One of the simplest methods is to change the security level zone to High (click Default Level, and then move the sliding bar up).
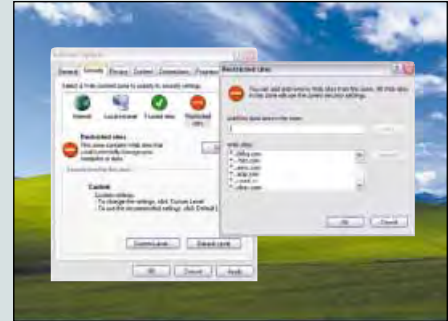
03 Sites you frequently visit can be added to the Trusted Sites zone. In addition, take advantage of the Trusted, Restricted and Internet zones. Set Default Levels to Medium. This setting won't prevent pop-ups, but it will suppress active scripting and ActiveX controls. As you encounter sites that employ intrusive pop-ups, copy and paste the URLs to the Restricted Sites zone.

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details or even a password. Never give these out without a reason and make sure that the site is official. If it's not, it's probably a phishing scam.

03 KEEP KIDS SAFE

Never agree to let children meet someone in person who they have met online. We've all read the horror stories of Internet grooming, but it's actually a lot harder to keep tabs on your children's online activity than you think. If you want to take more control, invest in a security package such as *NetNanny* that enables you to control the Web sites your children visit, as well as set the time and duration they can access the Internet.

04 SOCIAL COMPUTING

Keep the computer your child uses in a central location. Again, it's hard to keep a watchful eye on your children, so why not put your computer in a busy living environment where the whole family can participate? That way, you can all watch out for one another a learn from each other's mistakes.

05 TEACH YOUR CHILDREN

Join your children as they surf the Internet. Remember, Internet groomers and other unscrupulous characters are generally good at what they do. Your child may not know that they're giving away personal information, so make sure that they understand what they should and shouldn't be doing online.

06 RESIST THE FAME

Don't share photos of yourself with strangers – especially private ones. This may sound a little patronising, but you never know what the recipient is going to do with the images. You may find you've become an underground cult icon shared between thousands of users!

07 PRESERVE PERSONAL DATA

Keep your personal information private including your name, phone number, address, passwords and national insurance or credit card numbers. We know this sounds obvious, but you'd be amazed at how easily people enter personal details online – especially when entering competitions or attempting to buy something. For general Web browsing, why not use a separate free email account, such as Hotmail or Yahoo! Mail? This way, you can close them easily and not lose important contact details in the process.

Software firewalls offer basic defence from outside and inside security attacks

08 DON'T LET INTRUDERS IN

Along with an AV package, you should also make sure you install a firewall. A firewall creates a protective wall between your computer and the outside world. They come in two forms: software firewalls that run on your personal computer and hardware firewalls that protect a number of PCs at the same time. They work by filtering out unauthorised or potentially dangerous types of data from the Internet, while still permitting other (good) data to reach your computer.

Firewalls also ensure that unauthorised persons can't gain access to your computer while you're connected to the Internet.

09 QUASH THE THREATS

Spyware, adware, browser hijackers and diallers are just some of the fastest-growing threats on the Internet today. By simply browsing to a Web page, you could find your computer to be the brand-new host of one of these unwanted fiends. Another important step you can take to secure your system is to install a

spyware application. This type of program prevents the installation of ActiveX-based spyware and other potentially unwanted pests, blocks spyware/tracking cookies and restrict the actions of potentially dangerous sites.

10 STAY UPDATED

Regularly download security updates and patches for Operating Systems and other software. Most major software companies release updates and patches to close newly discovered vulnerabilities in their software. Sometimes bugs are discovered in a program that may enable a criminal hacker to attack your computer. Before most of these attacks occur, the software companies or vendors create free patches for you that they post on their Web sites. You need to be sure you download and install the patches, and ensure that you're receiving patches from the correct

patch update site – many systems have been compromised by installing patches obtained from bogus update sites or emails that appear to be from a vendor which provides links to those bogus sites.

11 WISE UP

Remember, not everyone on the Web is who they say they are. Even adults can be duped. This applies especially in chat room and to unsolicited emails. If you receive a seemingly friendly email from a stranger, or from a company asking you to update your personal details, delete it immediately. You'll soon learn to spot these emails a mile off and you won't even need to open them. PayPal and eBay users, for instance, are regularly targeted by rogue hackers, asking them for confidential details such as usernames and passwords. Bank customers are also frequently targeted, again asking for personal

Anti-spyware software stops spyware, adware and other unwanted programs before they infect your PC

details like address details and PINs.

12 IDENTIFYING INFORMATION

Don't provide your credit

card number or other identifying information as proof of age to access or subscribe to a Web site run by any person or company with whom you aren't personally familiar or that

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→ FURTHER INFORMATION

How to read and send emails securely

People are now becoming more concerned about how to securely read their email. The feeling is well founded

A password and all the information transferred by email can be sniffed and read by external parties. Despite the advances in encryption, there's

no foolproof method that can completely guarantee that your messages won't be intercepted and read by external parties. However, there are practical

tricks that can make it extremely difficult for a third party to obtain your email password and other sensitive information.

Make sure you enable TSL or SSL. TSL (Transport Secure Layer) is available in most desktop email clients (*Outlook/Eudora, Netscape Mail Client* and so on.) under the POP settings. Not enabling TSL means that the email is transferred in clear text and accessible to anyone in MIME encoding that is readable. For IMAP accounts you can enable SSL (Secure Sockets Layer) on your email client.

Highly confidential and sensitive information should never be sent by email without encrypting with an electronic signature. Email encryption is the scrambling of a message that prevents people other than the intended recipient from reading it. Most people don't want strangers to read their email, just as they don't want anyone to hear their

telephone conversations or read their postal letters. Email sent over the Internet without encryption is about as secure as sending a postcard. Your email travels through many different computers on the way to its destination, and anyone with access to those computers has the ability to read those emails. This could include government agents, Internet Service Provider (ISP) staff and malicious hackers.

The most common solution is to use a PGP electronic signature to encrypt the email. That way, even if an intruder obtains access to your email the message cannot be read without having the key. PGP is quite simple to use and available in most email programs. The process is dependent on each program so we can't go into it here. However, the help menu of the program you are using should contain full information about how to set it up.
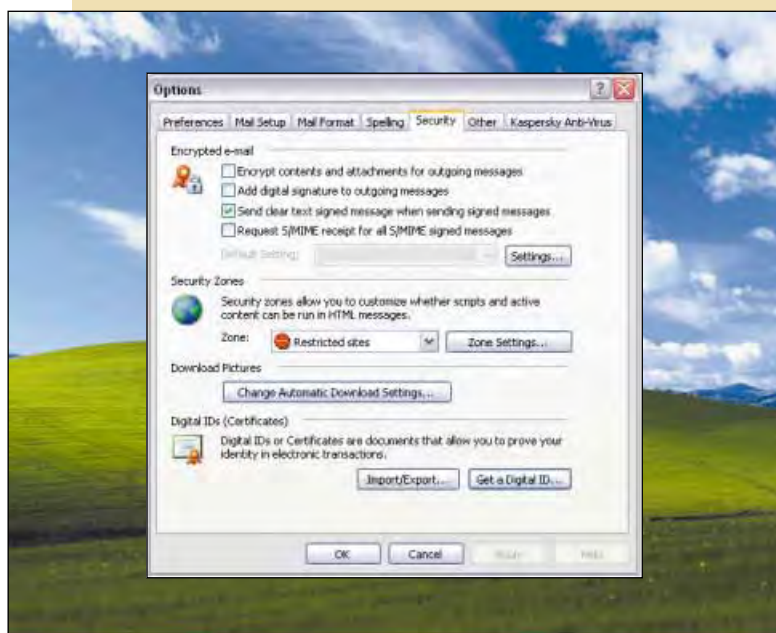
Outlook has built-in encryption tools that scramble a message to prevent people other than the intended recipient from reading it

doesn't have an extremely good, widespread reputation. Check consumer advocacy resources before giving out your credit card number to anyone, just to be sure that your trust is justified.

13 PASSWORD PROTECTION
Use hard-to-guess passwords when registering with Web site. Mix upper case, lower case, numbers or other characters that aren't easy to find in a dictionary, and make sure they are at least eight characters long. Don't share your password and don't use the same password in more than one place. If someone should happen to guess one of your passwords, you don't want them to be able to use it on other Web sites. In addition, change passwords regularly, at least every 90 days.

14 MAKE BACKUPS
Experienced computer users know that there are two types of people: those who have already lost data and those who are going to experience the pain of losing data in the future. Back up

Frequently back up your important data to prevent losing it in the future

IF YOUR PC IS INFECTED, TAKE ACTION IMMEDIATELY. IF IT'S BEEN HACKED OR BECOME INFILTRATED BY A VIRUS, DISCONNECT IT FROM THE INTERNET

small amounts of data on floppy disks and larger amounts on CDs/DVDs. If you have access to a network, save copies of your data on another computer in the network. Many people make weekly backups of all their important data. Ensure that you have your original software start-up disks handy and available in the event your computer system files get damaged. Windows comes with its own back-up utility, but for more flexibility you should opt for a package such as Dantz's *Retrospect Backup*.

15 BE SELFISH
Don't share access to your computers with strangers. Learn about file sharing risks. Your OS may permit other computers on a network, including the Internet, to access the hard disk drive of your computer to share files. This ability to share files can be used to infect your computer with a virus or look at the files on your computer if you don't pay

close attention. So unless you really need this ability, make sure you turn off file sharing. Check your OS and your other program help files to learn how to disable file sharing.

16 DISCONNECT
The digital highway is a two-way road. You send and receive information on it. Disconnecting your computer from

the Internet when you're not online lessens the chance that someone will be able to access your computer. If you haven't kept your AV software up-to-date or don't have a firewall in place, someone could infect your computer or use it to harm someone else on the Internet.

17 SECURITY CHECKS
The programs and OS on your computer have many valuable features that make your life easier, but can also leave you vulnerable to hackers and viruses. You should evaluate your computer security at least twice a year. Look at the settings on applications that you have on your computer. Your browser software, for example, typically has a security setting in its preferences area. Check what settings you have and make sure you have the security level appropriate for you. Turn those security bars up! For more information on this, see the walkthrough on *IE* that's on the previous page.

18 BE PROACTIVE
If your system has become infected, take action immediately. If your computer has been hacked or infiltrated by a virus, disconnect it from the Internet right away. Then scan your entire computer with fully updated anti-virus software. Before you reconnect to the Internet, think about how your computer could have been accessed and what you could have done to avoid it. Did you open an email attachment and let loose a virus? Is your AV software out-of-date? Take steps to minimise the chances of it happening again. An increasing number of AV manufacturers, including Symantec, now offer a free Web-based service to check your computer for viruses and spyware.

19 REPORT INCIDENTS
If you think you've been hacked or infected by a virus, email a report of the incident to your Internet provider, AV/firewall developer and the hacker's provider (if you can tell what it is). Often the ISPs email address is abuse@yourispname.com or postmaster@yourispname.com. By doing this, you let the ISP know about the problem on their system and help them plan.

20 SPREAD THE WORD
It's important that everyone who uses a computer be aware of proper security practices. People should know how to update virus protection software, how to download security patches from software vendors and how to create a proper password. Make sure they know these tips, too.

Appearances are deceptive

Don't believe all you see on the Internet

21 Masquerading
Online friends might not be who they say they are, so don't assume anything. Quite often, males and females pretend to be of the different sex, so you can never be too sure!

22 Remain anonymous
Extra care has to be taken in chat rooms because it's easy to become too comfortable once you've been chatting away for a few hours. Remember, never give out personal details such as your email, phone number or address.

23 Privacy
Don't give out any of your friends or family's details without asking them first. A good rule of thumb is to think what information about you, you'd want them to give to a complete stranger.

24 Think twice
Be careful when posting a profile or note in a chat room – your comments could easily be misconstrued, or remain indefinitely in the chat room. Make sure you haven't been too personal or included information in your profile that could be exploited.

25 Meeting up
Be cautious about meeting face to face. We're all adults and don't like people telling us what to do, but this really applies to our children. Many adults have found love on the Internet, but all too often we hear about the darker sides of the Internet. If you do want to meet up with a stranger, make sure it's in the daytime and in a public place. Just use your common sense. ■

PC ANSWERS PROJECT

Video-editing: Elements

PART 3 of 3 Now that you know the video-editing basics, it's time to move on to Adobe Premiere Elements, says **Shaun Weston**

Adobe Premiere Elements isn't the easiest video-editing application to master and neither is it as intuitive as some reviewers would have you believe. It is, however, one of the best of a bunch of editing titles at a price less than The Waltons would spend at Pizza Hut. In this, the third and final part of our video-editing series, we're setting aside Roxio VideoWave Movie Creator Lite Edition to see where we can take our imagination next.

Instead of messing around with the footage we captured, edited and burned in the last two parts of this series, we're going to capture new footage and explore only those parts of Premiere Elements that can expand our skills. In other words, we're not going to look in depth at capturing or burning to DVD. Instead, we'll look at those elements that set it apart from VideoWave.

To prepare yourself, it'd be a good idea to have some captured DV footage at your disposal. It doesn't have to be much – just a few clips that you can play around with. We'll also look at manipulating still images and audio, so have both of these on standby. When the time comes, we'll show you how to import extra media into Premiere Elements.

Flexibility and creative control

Premiere Elements offers you more flexibility right from the word go. The user interface is friendly to navigate, and the tools on offer, despite this being a budget version of a larger application, are powerful enough to satisfy most novice filmmakers. With additional creative control at your fingertips, your projects can take on a

professional feel, and you'll have extra options to challenge your imagination.

Any effects you apply to your clips, and also any transitions, are available for viewing almost immediately. Effects and transitions are usually time-consuming elements, but this is now a thing of the past. For those who make lots of mistakes, you'll be pleased to learn that there are unlimited undo and redo options. This is invaluable if you're moving lots of clips around, but want to be able to change your mind and revert back to a previous state in a few mouse clicks.

The Adobe Titles section is excellent. Although not quite as powerful or flexible as Premiere Pro, the Titles tool is something you're going to enjoy. With this tool, you're able to place the text where you want, with a range of animation

ON THE CD

*To get going with **Elements**, choose from a project list, or start something from scratch*

options at your disposal, including scroll and crawl. You can also save titles separately, maintaining consistency across your projects.

As with most other video-editing applications, you have a number of presets and templates on offer to help make your projects run as smoothly as possible. Premiere Elements is no different in this respect, containing a generous range

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→ STEP-BY-STEP GUIDE

Play clips simultaneously…

… and recreate the split-screen look of contemporary TV shows such as '24'

01 Right-click the clip you want to shrink and go to Show Clip Keyframe -> Motion -> Scale. The yellow bar that appears can be moved up and down to shrink or enlarge the clip in the monitor window. It's sensitive, so don't move it too quickly.

02 We chose 46.15, which shrunk our clip down to a relatively small, but still viewable, size. You can see the numbers near your mouse cursor as you move the bar downwards towards the number you want. Don't worry if it's not exact.

03 Go to the main monitor window and use your mouse to move your clip exactly where you want it to appear in your final movie. At this point, you can also press the play button to see your clip running in its new small format.
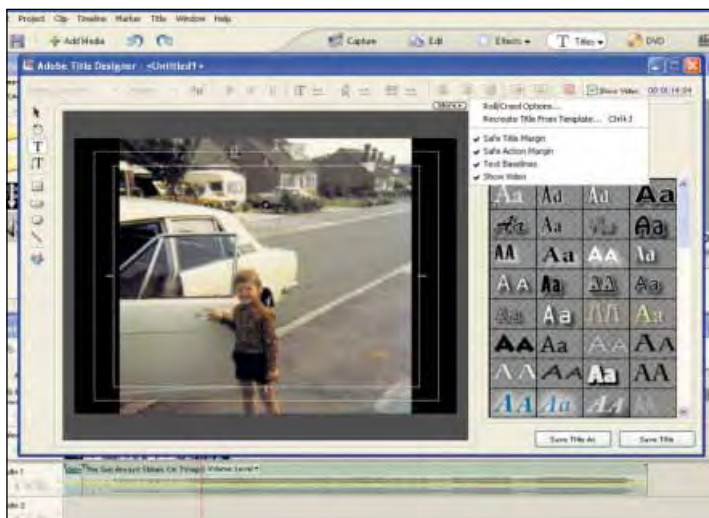
The More button reveals some default settings that you may as well leave as they are

L-Cuts and J-Cuts

Using advanced editing techniques for dramatic effect

The art of editing with L-Cuts and J-Cuts isn't as difficult as you may think. These simple audio overlay techniques are used in nearly every television programme and, even though it takes some time to master them, you'll soon be L-Cutting and J-Cutting like a pro.

What exactly are these techniques? Imagine you have two clips on your timeline, but you want the audio from the end of your first clip to carry on over the beginning of your second clip – this is an L-Cut. If the audio from the second clip begins before the clip actually starts (in other words, the audio for the second clip overlaps the end of the first clip), this is a J-Cut.

An L-Cut or J-Cut works best when you want to highlight something, either discreetly or obviously. Imagine a car swerving off a road and about to hit a wall. You can cut away before impact to a hospital room, or perhaps the face of the driver as they lay still in their hospital bed. However, the sound of the car hitting the wall carries on into your hospital clip. This is a prime example of dramatic use of an L-Cut.

It takes a while to become used to using these techniques, and you have to choose your moments carefully and not overuse the effect. However, perfect placement and impeccable timing will reap the rewards you're looking for.

This is why J-Cuts and L-Cuts are called what they are. Depending on which way your audio overlaps, it either looks like a J or L

of DVD templates, title templates and other guides. Where it differs from other applications is in its generosity when it comes to preset effects and transitions. There are bucket loads here and you'll have a fantastic time trying them all out. As we said last month, don't get carried away with resource-intensive special effects. Used effectively, they can make or break the atmosphere you're trying to create. They can be the pinnacle of quality and the bane of your overall viewing experience. Use sparingly.

Adding words

What may also seem a little different to you is the complex-looking Timeline, though this should be the least of your worries. It's very simple to use. You can alter the kind of view you have of the Timeline by selecting the More button on the top-right of the Timeline box and by choosing small, medium or large for Track Size. You can also add extra tracks here. Next to the main counter within your Timeline box, there's a slider that controls the magnification of your timeline. You can drag this either left or right to change how the elements in your timeline are viewed, but you need to start placing things on the timeline before you can see this properly.

This may sound strange, but *Premiere Elements*, in some ways, is laid out much better than *Premiere Pro*. While the larger application has the vim and vigour to create the most amazing finish to your movies,

04 Drag a new clip from the Media bin and position it on the Video 2 track, ensuring that the clip on Video 1 doesn't run out before the end of the new clip. You want them to eventually appear on-screen together to achieve the *24* look.

05 Do the same as you did before with the Scale option (by right-clicking the clip) and drop the yellow bar to roughly the same size as the clip on the Video 1 track. We're not looking for accuracy here, so don't worry if you're a few points off the mark.

06 Use your mouse to move the second clip to the opposite corner of the screen, or wherever you like. Press the play button to run both clips simultaneously, which looks very effective. All you need now is that famous *24* tune …

Premiere Elements has all the fundamental buttons in just the right places, making everything so much easier to find and simpler to implement. In this respect, *Elements* is the perfect tool for the novice user who wants to take things further.

Create a slideshow

Let's look at some of the major differences between what you achieved with *VideoWave* and what you can do here. Imagine you want to create a slideshow in *VideoWave*. It's a simple task and it's difficult to do something wrong, as all you have to do is drag still images to your frames and drop them into your project. With *Elements*, it's even simpler.

Now's the time to add some still images to *Elements*. Along the top menu bar, you'll see a green cross symbol and the words Add Media. Press this and a dialog will pop up asking you to choose the directory that contains your media. As soon as you choose a file or a selection of files, they'll instantly appear in your Media box. These are not the original files – merely instances of them that link to the original. This helps to keep the application running at a good speed.

In the top-right corner of the Media box, you'll see a small button called More. If you click this, you'll see an option for New folder. You're going to create a home for your still images now that you've imported them. This helps you stay organised, which is the best and only way to be when you're

making movies. You can hold your [Shift] or [Ctrl] keys to select multiple files in your Media bin, but we selected all of our still images and dragged them to the folder we just created. We renamed our folder by right-clicking our mouse and choosing Rename. We're now going

The handy Zoom slider will alter your view of the elements contained on the Timeline

to go through the whole sequence again and create a home for our movie clips. Eventually, we'll do the same for when we import audio, but we'll do this later on.

While we're collecting resources, let's create a couple of extras that you may find useful. If you right-click anywhere within the Media bin's blank space, you'll see a menu that contains New Item. This will open another menu that contains five new

elements. One is the 'Universal counting leader' and is the radar-like countdown sequence you've probably seen at some point in your TV and movie-viewing life. Click this and it will add itself to your Media box. If you pick this up with your mouse and drag it to the beginning of your blank

timeline, you can drop it on and preview it with the main monitor screen. Press the small green play button to do this and watch the scrubber move across your new media element. You've just started your new movie!

Going for more

Go back to the More button at the top-right of the Media box. You'll see an option halfway down called Create Slideshow. Choose this and just OK

the following dialog. You'll see that, once you click to action this dialog , the images contained in your Media box will jump to the timeline in the sequence that you sorted them. You can undo this action and opt to have the still images appear in the 'selected' mode instead. Either way, you have an instant slideshow that you can now preview in the main monitor window. You'll notice that, not only are the images there for all to see, there are also transitions in between each one. These were applied automatically by *Premiere Elements*. Now's our chance to play around with the effect settings.

Double-click one of the small effect boxes in between your images on the Timeline. A box will pop up called Effect Controls. This is for tweaking your effect to achieve the exact look you're after. Of course, you can only tweak the effect you're given, in this case something called Cross Dissolve, which is a popular and traditional transition. You can alter the duration of the effect, determine at which point the effect first appears (front, middle or end of clip), and preview the effect before you make your final decisions.

Here's where you can experiment a little by altering one of the other clip transitions. Close the Effect Controls and select one of the other transition effects that lie between your still images. Press [Del] on your keyboard (or right-click your mouse and choose Clear). This will remove the effect, enabling you to replace it with

Using keyframes

Altering clips with keyframes directly from the Timeline
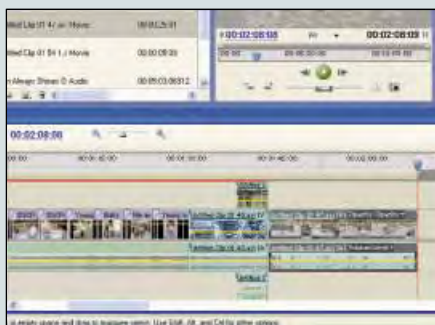
01 Select the clip you want to alter with keyframes. All you have to do is left-click the clip once with your mouse within either the Video 1 track or the Audio 1 track. As they're linked, the audio and video are able to be selected together.

02 If you want the volume to drop at a certain point, you need to add keyframes. Move the scrubber to where you want the audio to start dropping. Click the small diamond that corresponds with the track you're working on, as shown here.
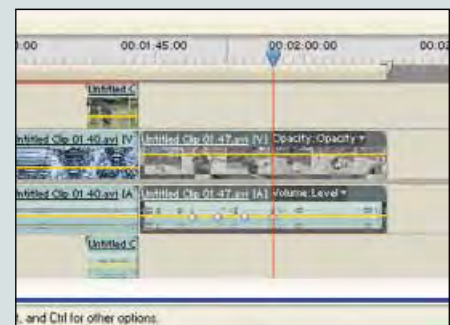
03 We moved the scrubber another three times along the clip and created a keyframe a total of four times. It doesn't matter about accuracy at the moment, as keyframes are flexible and movable, so just place them wherever you like on the clip.
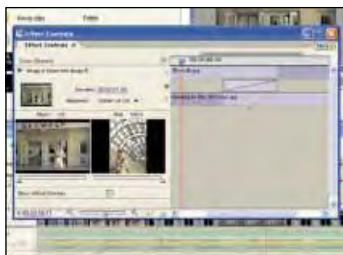
Double-clicking an effect or transition on the Timeline will present you with the Effect Controls dialog box, for more tweaking

something different. When you press the Effects tab along the top of the screen, the *Elements* interface will change. Suddenly, another section will appear, pushing other windows out of the way. It may seem like a small thing but this is perfect. In other applications, you end up with a screen full of windows overlapping one another and it's easy to lose track of what you're doing. With this method, you're able to find just what you want when you most need it.

Scroll down this new window and you'll see Presets, Audio Effects, Audio Transitions, Video Effects and Video Transitions. You want the last option, so click the arrow next to this to see what else this menu contains. You can pick any of these transitions, but we've opted for Page Peel. You can pick it up by holding your mouse button down, and dropping it directly between the two images on the timeline. Once you've done this, double-click your effect and tweak to your heart's content!

Go back to the instructions we gave you earlier regarding the adding of extra media elements to your Media box. You need to find a couple of audio files. For the slideshow, it's a good idea to choose music that fits the general atmosphere. In other words, a slideshow featuring your Grandma and Grandad wouldn't usually warrant a Meatloaf soundtrack. These clips can be stored in a new folder that you create – perhaps called Audio clips.

From the Media box, drag the audio clip to either the Audio 1 or Audio 2 track in your Timeline. Press the preview button again to see what everything looks like so far. The great thing about *Premiere Elements* is that you have so much control over the timing of cuts, effects and transitions to make music match exactly what you see on-screen.

Important titles

Adding titles is a piece of cake in *Premiere Elements*. After pressing the Titles tab, cancel the Templates option that pops up. We want to start our titles from scratch. After all, we're using *Elements* because it's more flexible than many other applications.

The More button will reveal a number of options, many of which are set to the default. You may as well leave these options ticked. What's good about titles is that you can caption all of your images, so that your slideshow is so much more than just a selection of photos to look at. It

To scroll or crawl

The simplest decision are often the hardest to make

You think that having perfect white balance and a cast of thousands in your movie is going to make you a big success? Think again. In reality, your directorial skills will be judged on how good your title sequences are. OK, maybe we're having a little bit of fun, but let's highlight here that titles don't have to be dull.

Think *Speed*, not *Coronation Street* when you design your title graphics. If your film took months to put together, why are you using a simple white or black text scroll or crawl? Put some effort into how you finish

and end your film. You could opt for the scroll or crawl options in the Titles section, but you could also make use of *Photoshop* (or another image-editing app) to design eye-catching stills that add a little extra to your project.

As a good example of what can be achieved with a little imagination and effort, rent *Panic Room* from your local video store or library and marvel at the opening credit sequence. It sets a mood for the rest of the film and helps pass the time we usually spend waiting for the first frame to flash on-screen. However, if

A slideshow can benefit from captions, but if you're making a decent movie, try something more adventurous when it comes to credits

you've thrown something together in a blender and just want to rush it off and burn it onto DVD, there's nothing wrong with a traditional scroll or crawl. Though if you're reading this tutorial, we suspect you want to do more...
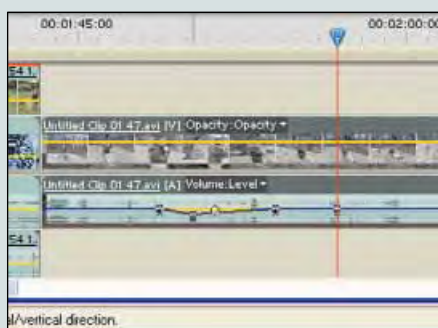
04 You want to move the second keyframe in the clip, as this sets the level the volume will drop to. Click and hold it with your mouse and gently descend, watching the decibel levels. You can move left or right to determine the speed.

05 You've created a dip in the audio with four keyframes. The third keyframe should match the second in terms of decibel level. The distance between two and three determines the length of time the volume is low.
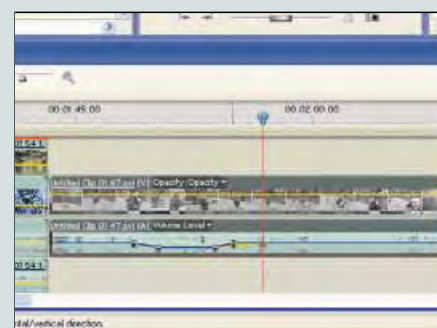
06 Finally, we move the last keyframe to a point in the clip where we want the volume to return to its normal level. The distance between two and three reflects the speed at which the volume returns to its normal state.

often makes things more interesting to watch.

Once you've selected a font and style, and have used your mouse to position it on the preview screen, you can save this title to your hard drive. This is useful if you want to avoid having to go through the same old steps again and again, just to try and match a particular style. When you've saved your title, you can close the Titles window and you'll return to the normal interface. You'll find your new title in the Media box, ready for you to drag and drop into your project.

Effects can be applied to this title, too. All you have to do is choose the effect or transition you want from the Effects tab and drag it onto the title within your Timeline. This means you can make the writing fly in, fade in, spin, twirl or whatever else your imagination stretches to.

Spend some time with your project now. Put **PCA** down and add more images or perhaps a couple of clips into your project. If you added a whole song earlier, try to add enough elements to reach the end of the song, which may be three or four minutes of footage.

Move on to DVD

Now's a good time to add some DVD markers, which will help when you come to burn your movie to disc. All you have to do is move the scrubber, which is the red line that traverses the Timeline, and then click the DVD Marker button to the left of the Timeline. A dialog will reveal itself – you can name your marker here and select what you want your DVD player to do when it reaches this point. This is like laying down chapters for your slideshow. If you have time, it will do
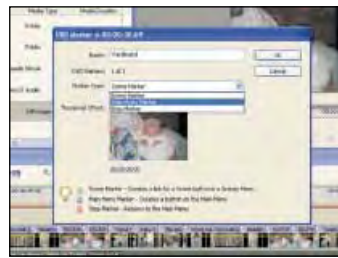
You can prepare your DVD ahead of time by incorporating DVD markers into your project

you no harm to mark each picture in your movie. This will empower your viewer and their remote control, as they're able to skip ahead or go back to the photos they want to look at.

Let's finish things off by preparing ourselves for burning the disc. Because you've taken the time to set some markers, you can go ahead and press the DVD tab, rest assured that your chapters will be contained within

the finished product. You can choose here to either use a template. or cancel and make a DVD with no opening menu at all. The disc will simply auto-play when it's placed into a drive. Your markers will still be there.

We hope that with this article and the associated tutorials, you'll have a better understanding of how your boundaries can be pushed further with the right application. We've still only skimmed the surface of what can be achieved with *Adobe Premiere Elements*, so don't stop challenging yourself. You should aim to have fun and increase your experience as a digital filmmaker. ∎

→ NEXT MONTH

We explain how to create a family tree database.

→ STEP-BY-STEP GUIDE

Changing colours
Don't be satisfied with the wishy-washy state of your original clip

01 The loading of the effects box is achieved by clicking the effects tab along the top of the screen. This will make the Effects box appear between the Media box and the main monitor. Scroll down the list until you find the Video Effects tab.

02 The Adjust folder contains correction tools, including Auto Color, Auto Contrast and Auto Levels. Choose Auto Color and drag the effect over to the clip you want to change. Let go of the mouse button to drop it into the Timeline.

03 Right-clicking your clip brings up a context menu. At the bottom of the menu, you'll see a section called Show Clip Keyframes. In this tab, you'll find an extra section for the effect you just applied. We want to choose Snap Neutral Midtones.

04 This'll find an average, almost neutral colour in your clip and then adjust the gamma values to make the colour neutral. If you want to change the levels of the RGB colours, too, apply Color Balance from Image Control.

05 As you can see, changing the red channel with the yellow strip marker removes any sign of red from the clip. You can afford to be a little more sensitive, so move the yellow strip only slightly to make colour change in each channel.

06 You can also replace colours completely by dragging another effect from the main palette. This is called Color Replace. The more effects you apply to your clip, the longer the rendering time will be. Don't get too carried away.

Shop on the Web, not the high street

COMPLETE GUIDE

Is your credit card burning a hole in your pocket? **Joe Cassels** goes through the basics of shopping on the Internet

→ AT A GLANCE

Pay securely

Find out the key things to look out for when buying online. We use Tesco's site as an example

SECURE HTTP

When parting with payment details check that the URL starts https. This is an encrypted connection.

eVOUCHERS

These enable you to reduce the cost of your shop. Vouchers come in the form of a discount code that you can enter here.

PRIVACY POLICY

All responsible online retailers will have a privacy policy that will tell you how your data will be treated.

BASKET

Your basket holds the products that you've selected so far in your shopping session. You can add or remove items until you pay.

MY ACCOUNT

Follow this link to make changes to the information stored about you and to change your account preferences.

TERMS AND CONDITIONS

Like the privacy policy, it's well worth taking a glance at the site's terms and conditions before buying.

CARD DETAILS

Avoid paying for goods online using a debit card. Credit cards offer greater protection should things go wrong.

STORE DETAILS

This can be handy to save you entering your card number each time you use the site, but avoid choosing it if you have any security concerns.

CONFIRM ORDER

Only click this button when you're sure that you're happy with the items that you've bought, as it completes your order.

PADLOCK ICON

Internet Explorer displays a padlock icon to show that this is a secure page. Other browsers have similar indicators.
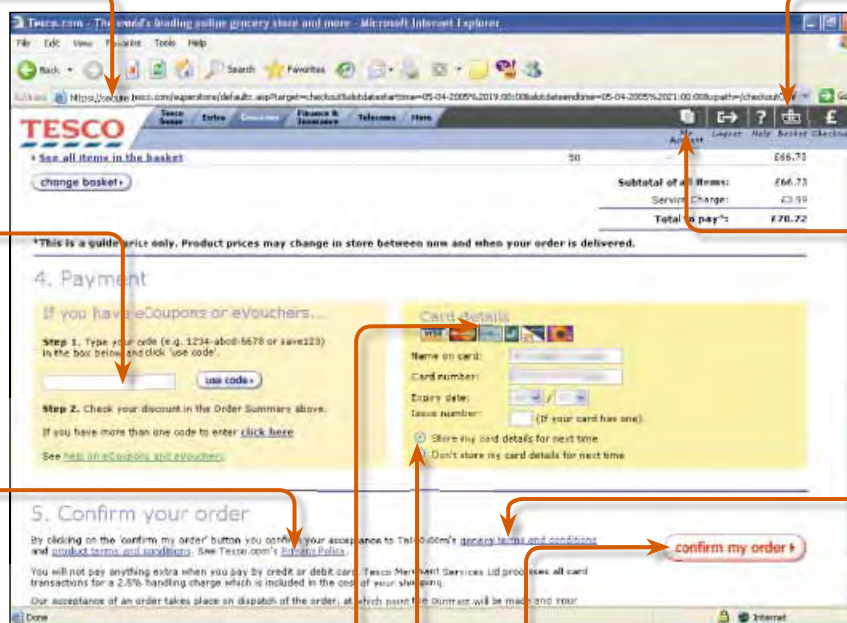
*For value PC components and electrical goods you can't beat eBuyer (**www.ebuyer.com**)*

Avoid crowds, parking problems and pushy sales assistants by shopping online. More and more people are buying presents, holidays and even the weekly groceries via the Internet. When it works well, it saves you time and cuts stress. However, there are pitfalls to avoid.

If you're shopping on the Net, don't part with any money until you're sure the site is what it claims to be. Does it have its own domain name? Look for contact details such as a postal address and customer service phone number.

*If you know your size, why not buy clothes online at **www.marksandspencer.com**?*

Are you a DIY nut? Screwfix.com will have everything you need

Any site operating from a free email or Web server may be dodgy. Check that you've been routed to a secure server before entering card details.

ALWAYS CHECK YOUR CREDIT CARD STATEMENTS, PAYING PARTICULAR ATTENTION TO INTERNET TRANSACTIONS

Secure pages show https:// at the start of the address rather than http://. You'll also see a locked icon of a key or padlock at the bottom of your browser window. Secure servers encrypt data so others can't read it.

Avoid giving away more information than you need to when

buying online. All you should need to give is your credit card name, number, expiry date and billing address. You may need to provide the three signature digits displayed on the back of your credit card as these help to verify that you actually have the card in front of you and are not just using an imprint. However, you should never part with your PIN online, nor should you give out this or your signature digits over the phone. You might need to specify gift wrap and delivery method, but asking for other identifying information is definitely not on.

Any site that stores your financial information should be password protected. Ensure that you choose a

sensible strong password composed of a mixture of lower and upper case letters and numbers. Don't use the same password for different sites as you could be giving someone else access to your credit card. Always check your credit card statements, paying particular attention to

Internet transactions. Be ready to challenge any payment that you think is incorrect. Take it up with the vendor in the first instance, then with your card issuer if you have no joy. Avoid using a debit card online. While many sites can handle Delta and Maestro, these cards don't carry the same protection that credit cards do. Credit card issuers underwrite your transactions and usually offer a refund should things go wrong. Some vendors are only too happy to retain funds from debit cards.

Refer to the reference

When you buy something via the Web, you'll usually be provided with a reference number when your order is confirmed. Most retailers also send this to you via email, but it's worth

*Need to send flowers in a hurry? Head to **www.interflora.co.uk***

printing out a copy or scribbling it down to be on the safe side. If you need to modify your order or chase it up, this reference number will be helpful as it enables the shop to find your order on its system quickly. While most online transactions go smoothly, it's worth anticipating problems so you can sort them out quickly.

Phishing for trouble

Fraudsters will try to con your shopping account details out of you. Don't be taken in

Phishing is an ever-increasing concern as online banking and retailing continue to expand. It's what happens when a con artist sends you an email, supposedly from your bank or from an online retailer, which tells you that you need to confirm your account details. The email looks convincing and the link that it contains appears to take you to the correct site. However, both the email and the site that you're directed to are fake, designed to make you part with usernames, passwords, credit card information and even PIN numbers. The fakes can be very convincing, including spoofed URLs, designed to look similar to those used by the company that's supposedly involved.

Few banks correspond with customers via email. If you receive a mail demanding action in a short space of time, with account closure threatened, suspect a phishing attack. Don't follow the link in the email. Browse directly to the company's site and make an enquiry. Consider phoning them if necessary. Guard your account information: you can always open a new one if it's closed down.

Phishing attempts can be very convincing. Don't drop your guard for a moment

Spend and save at Amazon

Shopping for books, CDs and videos has never been easier

Amazon is one of the best-established online shops. It's transformed the way many people buy books, CDs and DVDs and its success has been emulated by a number of similar services. If you haven't tried Internet shopping before, it's a good place to start.

Like most shopping sites, you can browse through Amazon's merchandise before you need to sign up or provide any personal details.

Use the tabs at the top of the screen to choose one of Amazon's shopping sections and search using keywords for the product that you want.

Once you've created an account and bought items from Amazon, the site begins to predict other books, CDs, DVDs and videos that you might like. This is based on your buying history and what other people who purchased similar things to you also bought. The recommendations aren't always spot on, but they're often remarkably accurate and can really help out if you've got some money burning a hole in your pocket but you're not sure what to buy.

Recommendations

To take a look at your current recommendations, go to the Amazon home page and follow the link marked Recommendations. This'll give you your top recommendations for books DVDs, toys, music and videos. To see more from each category, follow the relevant link. You can improve the suggestions that Amazon makes by telling it if you already own one of them or if you're not interested in it. There are two buttons at the bottom of each recommendation – one marked 'I own it', the other 'Not interested'. If you choose 'I own it', you'll be asked to rate the title, which can help the site come up with more appropriate suggestions for you.

The Amazon Marketplace enables you to buy rare and out of print items from other sellers. You might also pick up a bargain on other items. The product listing will have a link marked Used and New and the lowest price that it's being offered for in the

Give items you already own a rating to help Amazon improve its recommendations

Marketplace. Follow the link to see who's got it up for sale. You can opt to buy these second hand or new items via Amazon, using its payment system, but they are dispatched by the third party vendor, usually within two working days. Amazon has little control over the vendors that use the market place so exercise caution if you choose to use this option. You have little comeback if the goods aren't delivered.

If you have your own books or videos and CDs to sell consider doing it through Amazon. On the home page, scroll down to Sell Your Stuff and follow the link to Amazon.co.uk Marketplace to find out more. Unlike other sites, Amazon charges no fees until items have sold.
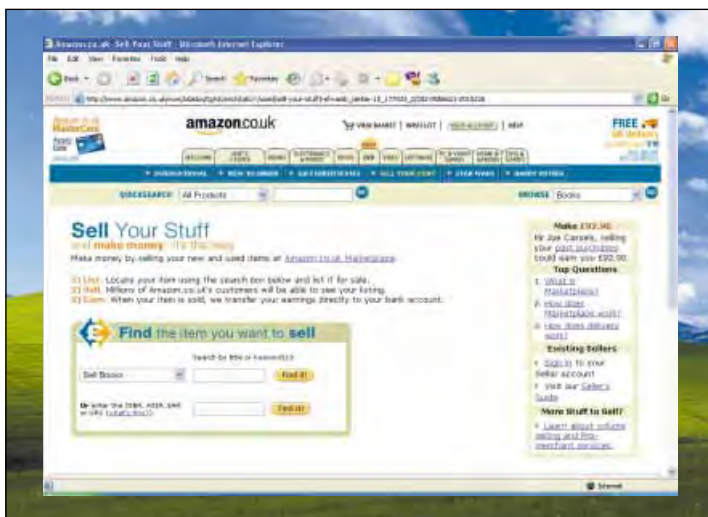
Use the Amazon Marketplace to sell your second-hand books CDs, DVDs and videos

→ STEP-BY-STEP GUIDE

Buy a book

No need to rifle through endless shelves – Amazon can find your book in an instant
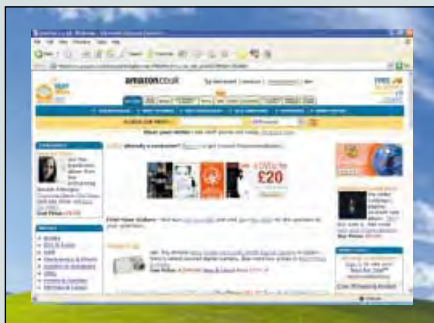
01 Browse to **www.amazon.co.uk**. If you've used the site before it may remember you and present you with some recommendations. Select one of the shops from the list of tabs at the top of the window: in this case we're choosing Books.

02 Use the quick search to find books based on a keyword in the title or by author. For example, a search for Dickens will help you to find the works of Charles Dickens, as well as various commentary books about his work.

03 Select one of the search results to see more information about it. Scroll down to read user reviews. To buy the book, click Add to shopping basket. When you have all the items that you want, you can checkout and provide billing and delivery information.

Buying and selling on eBay

The famous online auction site is home to plenty of bargains

If you're looking for something unusual or an item that you're unlikely to find in the shops, eBay is a good option. There's an incredible range of merchandise on offer, from the mundane to the ludicrous. You could pick up a bargain, but you could equally pick up a piece of rubbish, so it's important to keep your wits about you.
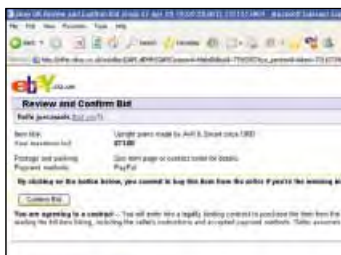
eBay bids for you by proxy up to the highest amount that you enter

Before you can bid on an item you need to register for a buyer's account (see the walkthrough below). When you place a bid, eBay uses a system called proxy bidding. Here, you place the highest bid you can and eBay bids on your behalf, just above the current top bid and carries on bidding until your bid is the winning one or your

limit has been reached. If you win the auction, you're contractually obliged to cough up the money you've pledged. The eBay feedback system ensures that sellers can warn others if you don't pay.

Sniping is the practice of waiting until the last seconds of an auction and then placing a bid, effectively preventing others from having the opportunity to bid again. Some frown upon this, but many people do it. There are even subscription services and software available that enable effective sniping.

Sell as well as buy…

Of course, you could use eBay to sell your stuff rather than just for buying. Browse to the eBay home page and sign in. Click Sell on the main page to set up a selling account and to list an item. To open a selling account you need to provide address details, plus those of your bank account and a debit or credit card. You can opt to pay eBay fees via a card, direct debit or by Paypal. Confirm your details before proceeding. Choose a selling format, which can be either an auction where the highest bidder receives your item, or a fixed price sale where the first
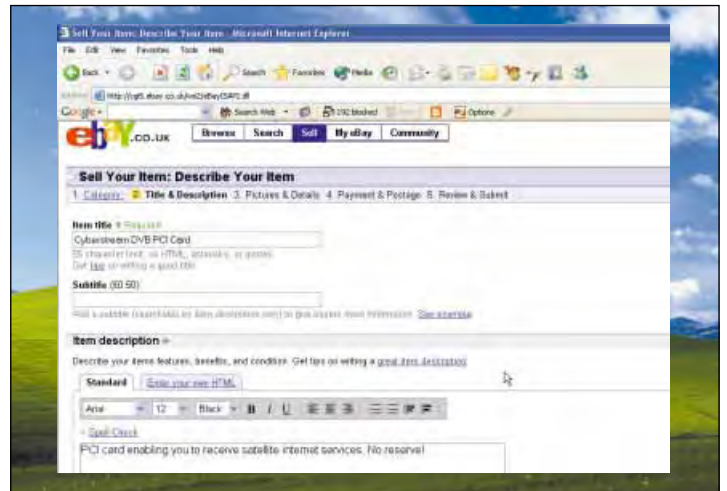
Describe your item carefully and honestly when placing an eBay advert

person to agree to pay your price wins the item.

Select a category for your listing. You can do this by browsing the categories and subcategories or by entering a keyword to search for the most relevant one. You can opt to list items in more than one category, for a fee. Enter an item title, which is free and an optional subheading, which costs 50p. Enter the text of your advert or move to the HTML tab to make it look pretty. Supply a starting

price and a reserve if you want one. Browse to an image to go with your advert and select a layout. Enter the means of payment, and postage details. Finally, check your advert and click Submit once you're happy with it.

Once you've placed your advert, make sure you answer any bidder questions and ensure prompt despatch of your item. Buyers can use the feedback system as well as sellers and you need a good record for bidders to take you seriously.

→ STEP-BY-STEP GUIDE

Start bidding

Unlike other shopping sites, eBay is an auction, so the highest bidder wins the item

01 Point your browser at **www.ebay.co.uk** and click Register Now. Complete the registration, providing the personal information requested. Return to the home page and enter some keywords into the search bar before clicking Search.

02 eBay will present a list of items matching your keywords, usually showing those auctions that are due to finish earliest first. Select an item to view it, and you'll see its current price, end date and time, and details about delivery.

03 Before deciding to bid, check the advert wording carefully and see if the seller has a good feedback rating. If you're happy to proceed, click Bid and give the highest price that you're prepared to pay.

Grocery shopping made easy

Online shopping is as effective for a can of beans as it is for CDs and books

The joy of shopping online is that it frees you from the confines of a conventional shop, so you don't have to jostle with other customers or have your brain melted by muzak. Few of us enjoy trudging around the supermarket, which is why Web-based grocery shopping is catching on. Most sites remember what you've bought on previous visits, which is a huge help because you only have to search for each item once. Your first visit might be a little slower than subsequent ones, but once it's out of the way, there'll be no stopping you.

Start by choosing an online supermarket. For example, both Tesco and Sainsburys offer Internet shopping although availability varies according to your postcode. Browse to **www.tesco.com** or **www.sainsburystoyou.com** to find out if you're covered by each service. Before you start shopping, you'll need to register. This involves providing your address including postcode, some login details and you'll need to agree to the service terms and conditions. You can also associate a Nectar or ClubCard with your supermarket account to receive loyalty points when you shop.

Once you're registered, you can start shopping. You can find products in a

You can't feel the pears, but supermarket staff will ensure that you get decent fruit

variety of ways. The sites enable you to browse the supermarket by aisle if you like. Simply select the product area that you want to look at, followed by one of its subdivisions. Keep selecting subcategories until you get to a product list. You can opt to see a picture of each product, which helps you to work out what it is, although you might want to turn this feature off if you're on a dial-up connection. If you're not a natural browser, you can opt to search for each item using keywords in the usual way. Alternatively, you can input a shopping list and let the site find you whole list of items at once. Things become a lot easier once you've done your first shop, because the supermarket remembers what you've had before. ■

→ FURTHER INFORMATION

Holidays

Wish you were there? Book yourself a break online

Why go to a travel agent and watch them tapping away at a computer, when you can do the same thing yourself? Most major travel agents have online shops that enable you to book what you want when you want, without having to deal with someone who doesn't understand your needs.

Even if you can't afford to get away, playing fantasy travel online is a nice way to relax

The Web gives you access to book directly with airlines and hotels, and reap the benefit of lower prices. You don't have to commit to buying anything unless you part with your credit card details. You can go quite a long way towards booking flights and hotels and constructing an itinerary without spending a penny. For flights, try visiting EasyJet (**www.easyjet.co.uk**), British Airways (**www.britishairways.com**) or Expedia (**www.expedia.co.uk**). Many online travel agents enable you to book hotels and package holidays too. Check out eBookers (**www.ebookers.com**), Opodo (**www.opodo.co.uk**) or Thomas Cook (**www.thomascook.com**). Don't forget that the Internet may enable you to talk directly to the hotel that you'd like to book with. You don't always get cheaper prices by going direct, but there are bargains to be found. Look in guidebooks like the Lonely Planet or Rough Guide Series for hotel or campsite Web addresses.

→ STEP-BY-STEP GUIDE

The weekly shop

Why traipse around the supermarket when you can shop in Tesco from your desktop?
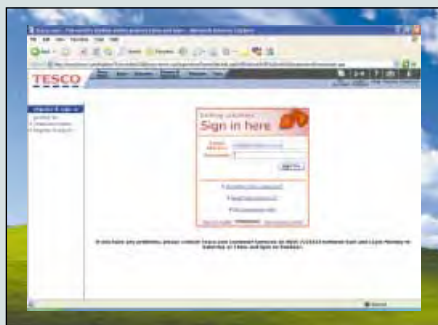
01 Head to **www.tesco.com** and follow the link to Groceries. Opt to register if you haven't done so already and provide the necessary sign-up information. When you return, provide your email address and password to sign in.
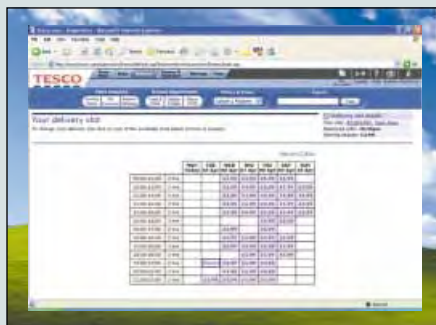
02 Once inside, click Book a delivery slot. Different slots attract different delivery prices. Choose one and return to the main shopping page. If you've used the site before, you can see what you bought previously in your favourites.
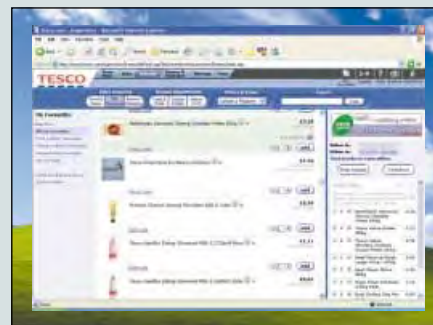
03 Browse the shelves and when you find a product you want, select a quantity and click Add. It'll appear in your basket on the right-hand side. Once you have all the items that you want, click Checkout and provide payment details.

PC ANSWERS PROJECT

Blogging in the fast lane

You're nobody without a blog, or so they say. **Richard Cobbett** and the imaginatively named **www.richardcobbett.co.uk** go online to talk turkey

You don't have to want fame and fortune to set up a blog. It's not simply the latest hobby, it's the new way of creating a Web site – providing content in diary form, one entry at a time, rather than traditional pages, and all in a form so easy that no technical knowledge is required. Visit **www.blogger.com** and you'll be up and running in seconds.

However, that's too easy for us. Free services such as *Blogger, MSN Spaces* or the new *Yahoo! 360* are all one-size-fits-all affairs with a fixed set of features and the perpetual fear that someone can one day pull the

ON THE CD

plug. Blogging takes on all-new possibilities when you handle the details yourself, with your own server and software, with the option to introduce everything from opinion polls to full community management. Best of all, as long as you have a decent Web package, you can do it for free.

Blog building blocks

Most blogging tools are built on a language called PHP, which in turn is supported by most commercial hosts. Free Web space on sites like Geocities and Tripod is unlikely to qualify. You'll also need access to a *MySQL*

database. You don't need to know anything about this, save its name, your username and your password. You usually receive at least one with any virtual hosting provider, and one

is enough – it'll host any combination of Web packages you throw at it.

The software we'll be using can be found at **www.wordpress.org**. *WordPress* is an open-source blogging

tool, and a snap to install. Download it, extract all the files into a directory on your hard drive, and look for a file called wp-config-sample.php. Open this, change the database settings to

> ## IT'S THE NEW WAY OF CREATING A WEB SITE – PROVIDING CONTENT IN DIARY FORM, ONE ENTRY AT A TIME

the ones you want (check with your host if you're not sure about this) and save it as wp-config.php.

Using any FTP package, upload all the files into the directory you want

---

→ BLOGGING OPTIONS

The world of blogging tools

We like WordPress here, but it's by no means your only option for creating a blog

01 *MovableType* (**www.movabletype.com**) is the other big name in the blogging world right now. It's more fiddly than *WordPress*, but arguably more powerful. It's able to save your entries as a HTML file rather than pulling them out of the database, making them available even if your *MySQL* server goes down. You'll have to pay to use it for a commercial site, although a Personal edition is available as a free download. This will handle both your blog and any plugins you might need.

02 *Drupal* (**www.drupal.org**) and *Mambo* (**www.mamboserver.com**) are Content Management Systems. *Drupal* is more configurable while *Mambo* is easy to get to grips with. They're designed to create full sites complete with user communities, but they can easily be used as blogging platforms that make use of features such as forums and file storage instead of using a hundred different Web applications to achieve full site functionality.

03 At the top end of the market is *ExpressionEngine* (**www.pmachine.com**). Unlike most of its rivals, this isn't free and at $150 just for the non-commercial edition, it isn't even cheap. What you get for your money is one of the most advanced Weblogging tools around, with built-in support for everything from tracking links to your site to locking out particular images for users without the necessary clearance.

Here's a totally random WordPress *site, picked entirely at random, randomly. It was designed in* Dreamweaver, *with the* WordPress *loop added later*

Spam, spam, spam, spam...

Guess who's coming to dinner this time around

Running a blog makes you an instant target for comment spammers. These nefarious crawling coprophagans love nothing better than to try and fill your comment form with links to their rubbish, and they're becoming better at it. *WordPress* comes with some basic spam-busting tools built in, up to and including having you authorise every post, but there are more powerful ones available as plug-ins. Look up the section 'Combating Comment Spam' at the Codex (**http://codex.wordpress.org**)

The most common tricks are posting to old threads in the hope you won't notice, disguising the links in complimentary posts ('Hi! Great site! Great Info!') and simply trying to swarm you with them in the hope that you'll ignore it.

your blog to be in (typically along the lines of http://www.pcanswers.co.uk/blog/) and run the install program from your Web browser by typing your server's equivalent to http://www.pcanswers.co.uk/blog/wp-admin/install.php.

This is effectively a one-click install, with the setup program automatically filling in directory names, for example, and leaving you to enter more basic information, such as the name of your new blog (which you can change

later). After checking that everything looks right, click the OK button and *WordPress* will fill your database with all the information it needs, hand you a temporary username and password, and usher you into the Dashboard to start blogging. Touch wood, this should be relatively painless. If *WordPress* complains that it can't access your database, double-check the information in wp-config.php and reupload it. One potential gotcha to watch out for is if your site uses a

system such as *CPanel* for you to create and delete *MySQL* databases and users at will. In this case, if your user name is 'test', you may say that you want your database and user to be called 'wp', but they'll actually come out as 'test_wp'.

You'll note that while we're using PHP and *MySQL* technology to power this new blog, you don't actually have to get your hands dirty in either. From here on in, you only need worry about the administration panel.
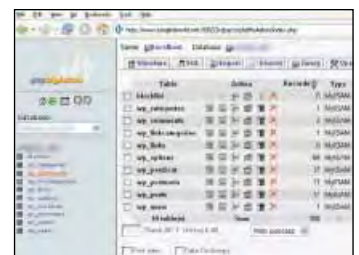
Don't worry – you'll never have to master phpMyAdmin. *However, it does make it very easy to add tables to your database, if necessary*
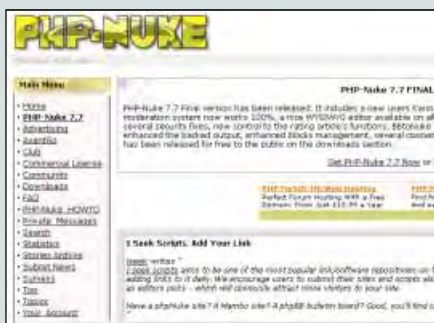
04 *PHPNuke* (**www.phpnuke.org**) is one of the most commonly seen portals on the Web, but that doesn't necessarily make it the best choice. It's often hit by attacks and you have to pay to obtain the latest versions – not to mention that sites made with it almost invariably look identical. If you've the time and patience, it might work out, but in most cases you're better off looking in entirely the other direction.

05 If you want to get the baby and bath water in one shot, *TikiWiki* (**www.tikiwiki.org**) may be ideal. It handles everything from wikis to blogging, with the ability to use just about every feature you could want. However, this means you'll experience some of the most staggering bloat you will ever have the misfortune to encounter. Very much one to save until you need its specific mix of every feature on Earth in one go.

06 Finally, just for a chance, we have *Blogger* (**www.blogger.com**). Using this is less restrictive than you might think, with the option of hosting on either the dedicated Blogspot site or having the files FTPed across to your own server and only using *Blogger* tools for commenting and updates. It's free and easy, but after a while you'll almost certainly grow tired of its limitations and want to get your hands on something better.

Tracking back your posts
One of the more confusing parts of blogging

One of the ways that blog owners can talk to each other is via a system called Trackback. The details aren't particularly important, but effectively it works by your blog engine sending a message (a trackback or a ping) to the person you're linking to, which tells them what you've done and gives them a quote for their site. Anyone reading their post can then see your trackback, and head back to you for your take on the subject. In *WordPress*, trackbacks are known as Pings, and you'll find their settings in the Discussion menu under Options. Each individual post you make can be set to receive pings or not, simply by flicking the option at the top of the screen.

Blogging made easy

Now we get to the fun bit. The first thing you'll see after logging into your site is the Dashboard, which gives you instant access to the most recent posts and comments on your site, the latest people who've linked to it (provided by a **www.technorati. com** search), and *WordPress* updates on new plug-ins, releases, stories and so on. At the top of the screen, you'll find the name of your blog, and a View Site option that'll take you to the main page. Here, you'll find a

post welcoming you to your new site, links to *WordPress* developers, and a full graphical theme to start playing

THE FIRST THING YOU'LL SEE IS THE DASHBOARD, WHICH GIVES YOU INSTANT ACCESS TO POSTS AND COMMENTS

with – it's called Kubrick, but you'll see it listed in the administration panel as *WordPress* Default.

By now, you've almost certainly noticed that while Kubrick is attractive and easy to use, the actual links on it

Return to the administration window by entering the address of your /wp-admin/ directory, and try making a few test posts. *WordPress* comes with an editor that will style up your text with bold, italic and other types of formatting, and there are plug-ins available to replace this with a more fully featured word processor layout. For now, stick with what you've got – and click View Site to see how *WordPress* handles them.

Enter WordPress

WordPress offers two basic forms of entry. Blog posts are, unsurprisingly, called 'Posts.' They're arranged by date on your main page, then archived by date and category. You can also create 'Pages', which stand alone, and are ideal for biographical information, links and other content that won't change on a day-to-day basis.

are woefully poor – your Web browser constantly being thrown to addresses with far too many numbers and question marks in them. Before we go any further, we need to fix this. What we really want is plain English addresses, such as '/2004/05/hello-world', and we need to do this before anyone tries linking to us. In other words, we need 'Permalinks'.

Open up a text editor and save the empty file as 'htaccess'. Upload this into your blogging directory and use your FTP tool to rename it '.htaccess' (noting the case, and the dot at the start). This file will redirect traffic according to the rules you, or the programs working for you, lay out. Right-click it and choose the CHMOD option (this may also be down as Properties/Set Permissions, depending on your client). By default, this will probably be down as 664 – change this to 666 and click OK. This gives *WordPress* permission to edit it at will.

Return to the Administration Panel and click the Options menu, then 'Permalinks'. This screen explains the process in plenty of detail, but in a nutshell, you simply have to tell *WordPress* how you want your posts to appear: the fairly long-winded '/%year%/%monthnum%/%day%/ %postname%/' giving '/2005/10/

Six essential blogging resources
Carefully picked from the Web, and useful to all site owners

01 Opensourcecms.com is one of the most useful pages for Web site owners. It hosts demo servers for most major PHP-based blog/wiki/CMS/shop/whatever else and gives you the keys for free. The sites are reset on an hourly basis, so even if someone has made a mess of the software you want to try, it'll only take a few cups of tea before everything's back to normal. In most cases, plug-ins are the only things you can't play with.

02 CSSZengarden.com is all about design. If you've yet to learn the joys of CSS-based design over traditional HTML, a quick tour of its hand-crafted exhibits should persuade you. Every single design has the exact same HTML page at its core – the only thing that changes is the 'style sheet' assigned to it, and all of them are available for you to take a look at. You can't steal the images, but you can draw inspiration from everyone else's work.

03 Technorati.com has become a central hub for the blogging community, charting links between pages, sites covering specific topics and many more things besides. You don't need to do anything to have your blog included on it – *WordPress* sends a ping to its main server automatically whenever you post a new entry. If you sign up with the service, you receive regular updates on who is linking to you and how popular your blog is.

WordPress **features anti-spam prevention by default, but we recommend adding** Spam Karma **or another plug-in filter to be safe**

hello-world' as a unique address. You can choose whichever elements you like, but you do have to make sure that you won't end up with two the same (as can easily happen if you only use the post name, or the date). Note that while you can change this as often as you want, your URLs will change – anyone trying to follow a link to an old post will just see a File Not Found error.

By using Permalinks and Pages, you can quickly hide the fact that you're running a blog. By creating pages as 'children' of other pages, and renaming each page's stub (the unique name that appears in the address) you soon end up with structured addresses such as 'articles/computing/blogging' instead of having to point to the page with the ID number 53.

Posters and users

One key difference between a blogging tool such as *WordPress* and a standard Web site is that you have much more interaction with your readers. You're the admin of the site and one of the many things you can do is create other user accounts for people you trust. You can even give passing visitors the ability to register an account and sign in just for comments.

Click the Users option from the menu to create, delete, and set permission levels for anyone you want. At Level 0, the user is on the system, but has no rights. At Level 1, they can post, edit and delete their own posts. Levels 2 – 4 are the same, but also offer control over anything posted by lower users. At Level 5, you can start managing the site's links, and view information on lower-level users. And so on and so forth, until you're at your own account – Admin – which is Level 10 and can do anything.

WordPress is a very capable package right out of the gate – but it doesn't do everything you might want. As such, you'll often find yourself installing plug-ins to add extra features or smooth over rough edges. This couldn't be easier. In most cases, you simply have to download the plug-in (as a .php) file, upload it into

wp-content/plug-ins and then activate it on the Plugins menu in the Dashboard. Should anything go wrong, or if *WordPress* stops working, deleting it from the directory will put it back to normal. Even so, we recommend taking a backup before making any changes to a site. The official repository is at **www.wp-plugins.org**, but you'll find many more at Blogging Pro – **www.bloggingpro.com**.

Plug-ins come in many forms, and add new features to the administration panel and the parts that your readers will see. *WYSIWYG*, for example, which you'll find at **www.mudbomb.com**, replaces the basic text editor with

database. This is extremely easy if you have a program such as *phpMyAdmin* as part of your hosting package, requiring you to simply open the database from your control panel, point it to the text file (with the ending .sql) and click an OK button to run through the necessary routines. If you're going it alone, things might be trickier. Your ISP will be able to give you more information on how to do it with your specific hosting package.

RSS support

Every blogging package features support for RSS feeds. *WordPress* is no exception. The advantage of these is

ONE OF THE MANY THINGS YOU CAN DO IS CREATE OTHER USER ACCOUNTS FOR PEOPLE YOU TRUST

something more akin to a word processor, complete with a gallery to show you all the images you've uploaded to your blog and live formatting of your posts.

A few of the more advanced plug-ins do have more involved requirements, typically asking you to add extra fields to your *MySQL*

that rather than having to visit your site on a daily basis, your readers can simply plug your feed address into a newsreader such as *FeedDemon* (**www.feeddemon.com**), *SharpReader* (**www.sharpreader.net**) or an online equivalent such as *Bloglines* (**www. bloglines.com**) for instant updates. You don't have to do anything at all to

04 Bloglines (**www.bloglines.com**) isn't actually a blogging tool in itself, merely a way to aggregate blogs. You can use it to keep up to date with whatever your friends or contacts are saying, as well as link it up to your own posts and comment threads to see the latest activity on your own site. It's a useful site for staying on top of all your Web communication, just as long as it produces an RSS/Atom feed.

05 If text isn't your thing, **www.audioblog.com** offers an easy way of using your voice to speak to the world. As of recently, it also supports full video blogging. You have to pay for the service, as well as any bandwidth spillage over 1GB, but in practical terms that's just a bit over a quid each month for a straight upload/streaming service with absolutely no attached hassle.

06 Finally, every blogger occasionally needs a good stock image – ideally one that won't lead to a lawsuit. Your best friend here is the Stock Exchange (**www.sxc.hu**), although you'll find others, such as **www.morguefile.com**, if you can't find a suitable image there. Make sure to check the copyright settings before using any images – most are free use, but others (especially model shots) ask you to check with the owner first.

make this available, with Kubrick automatically publishing details on your main feed (for posts) and individual comments threads. If you're using a theme that doesn't do this, you'll find the main one at **www.yoursite.com/wp-rss2.php**.

However, using this generic address can be more trouble than it's

through to, rather than simply telling you how many have viewed it. You can even use it to create podcasts.

As professional as Kubrick looks, you're not going to want to use it forever. As it stands, your *WordPress* blog may have the world's greatest content, but it's hardly going to stand out visually. Luckily, *WordPress*

justinblanton.com/projects/smartarchives/**) or *NicerArchives* (**http://weblogtoolscollection.com/b2-img/narchives101.phps**).

Looping your theme

The loop is by far the hardest part of *WordPress* to fully understand, because it swiftly grows and congeals as you start adding dates, comments, contact information, and other template tags to your posts. At its most basic however, it looks like this:

have available will only work if they're part of the loop. <?php the_title(); ?> will give you the name of the post it's currently working on, not the page itself. You don't have to worry how many this is, or how to keep them apart – it could be one, it could be a hundred, but *WordPress* will always use that template within a template when pumping them out.

To set exactly how many this is, you need to return to the Administration panel, choose Options, and then Reading. Don't set this value too high, or your page will take forever and a day to load.

YOUR WORDPRESS BLOG MAY HAVE THE WORLD'S GREATEST CONTENT, BUT IS IT GOING TO STAND OUT VISUALLY?

worth. If you ever move the site, either physically, or by shunting its data into another blogging tool such as *MovableType* or *Expression Engine*, this address will change, and you'll almost certainly lose readers as a result. Instead, you can use *FeedBurner* (**www.feedburner.com**) to take the information and pump it out as **http://feeds.feedburner.net/mysite**, simply changing the source of the URL in the background whenever you want, without making everyone else update their settings.

Feed fun

FeedBurner isn't a dedicated blogging tool, but it's an extremely useful service. First of all, it's free. It also has the ability to dive into your feed and play around in a number of interesting ways – producing a convenient

If all your theme files are CHMODed 666, you can make changes to your template from the Admin screen and they'll go live immediately

readable version for anyone who simply types in the URL (normally they'd just see a mass of gibberish), inserting *Flickr* photos or Google AdSense adverts between posts, and bypassing the tedious format wars between RSS/RSS 2/Atom and any other newsfeed formats by simply serving up whatever each specific browser asks for. Most usefully of all, it gives you full statistics on exactly which stories readers have clicked

is easy to customise. It just tries to pretend otherwise.

A full course on Web design is beyond the scope of this article, so if you're completely new to it, you'll probably want to download a different theme rather than creating one from scratch. If not, we'll assume that you have a fully created template, with two gaping holes – one in your sidebar, where the site's menu should go, and one in the middle for content.

Adding content is a simple matter of adding tags to the HTML file, which are automatically converted into information when your readers load up the page. For example:

```
<?php wp_get_archives('type=daily&limit=15'); ?>
```

translates as 'Show me the last 15 days worth of daily archives', while

```
<?php wp_title(); ?>
```

displays the name of the current page, either as a title on the page, or within the <TITLE> section of your HTML page's <HEAD>.

Creating your sidebar is as simple as picking the features you want to show, then customising them. The Kubrick theme uses many of these tags to display information in the sidebar and is an excellent way of seeing them in action.

On my own personal site, which also runs *WordPress*, the sidebar automatically shows the names of the last three months. Another link displays a page of everything that's been added to the site and it can be sorted by category or date, as you choose. Sadly, this is a hacked-in feature, and not something that *WordPress* can do with a quick template tag. For something similar, look up either *SmartArchives* (**www.**

```
<?php while (have_posts()) : the_post(); ?>
<?php the_title(); ?>
<?php the_content(); ?>
<?php endwhile; ?>
```

Put simply, this translates as 'While there are still posts to show, print out the title and the content, then do the same for the next.' It won't come out especially pretty – you'll just get the raw text – but it'll work. Of course, a

The Dashboard is your eye on the wider **WordPress** *world, as well as showing you your own latest updates*

full loop will have all that wrapped in CSS tags to style it up properly, with checks to provide error messages if the user has tried opening a page that leaves *WordPress* speechless, but you can see that for yourself in the actual themes. This, for example, will turn the title into a header, leaving the actual post as standard body text:

```
<?php while (have_posts()) : the_post(); ?>
<h1><?php the_title(); ?></h1>
<?php the_content(); ?>
<?php endwhile; ?>
```

Nice and easy. The important thing to note is that many of the tags you

The best of the blog tools

WordPress isn't the only blogging tool out there, but it's easily one of the best. Both hugely expandable, and extremely easy to use day-to-day, the only problem you're likely to encounter with it is that the template tags can lean rather heavily towards its developers' favourite

ways of doing things, rather than your own. Hammer it into shape, and it proves just as capable of running a full site as a handful of blog posts – every page on my own site uses it as a base, complete with integrated search engine, despite only one of them acting as a fully fledged journal page.

Of course, simply setting up a blog is only the start. You have to keep posting to it and ideally, you have to find a niche in the …err… 'blogosphere' to call your own if you want to build a reader base. Luckily, in a world where anyone can set up a site, anyone has the chance to make it as an Internet hero. ∎

Get more from Linux
Use the source

Compiling your software from scratch gives you more power and speed – or at least that's what **Paul Hudson** thinks

→ FURTHER INFORMATION

Gentoo Linux: if your time is less valuable than your computer's time, this makes a great choice of distro

Gentoo: the source-based distro

If compiling everything from source is so fast and powerful, why not do it for everything?

Others have already asked this question and created the solution: Gentoo, a distro where everything is compiled from source. While this sounds like an enormous amount of work, the power of Gentoo is that it does all the work for you. You tell it what you want to install and it downloads the source for it as well as the source for any dependencies, configures it to your liking, then installs it.

Of course, compiling everything from source code is notoriously slow. Getting a system up from scratch to a *KDE/OpenOffice.org* system will

take around a day, which is more than most people have time for. Then, when a new version comes out, it's time to start recompiling! As a result of this, the popular thinking about Gentoo users is that they will be the first to have the software, but the last to be able to use it.

For more information about Gentoo, visit **www.gentoo.org**. For a lighter take on the problems with Gentoo, visit **http://funroll-loops.org**. Either way, installation is not for the faint-hearted: read the documentation thoroughly before you consider installing.

The difference between compiling your software from source and using pre-made packages is akin to the difference between eating a gourmet meal and eating a warmed-up ready meal. When you cook food – or compile software – yourself, you choose what goes in and what stays out. Do want more features? Do you want more speed? Do you want your favourite program to use *KDE* rather than *Gnome*? All this and more is within your grasp.

Compiling software from source is the, ahem, source of much fear, uncertainty and doubt about Linux. As an existing user, you know that you can install your software through a GUI if you want, with no source code in sight. Even if you want to install something from source, it can be as easy as typing three short commands, as you'll see. The complexity – such as it is – only sets in when you want very specific options.

Obtaining source code

For the purpose of this article, we'll be using the PHP programming language for our 'target'. That is, we're going to download the source code to PHP, compile it and install it. The first step

is to snag the source code. This is available on the PHP site at **www.php.net/downloads.php**. From there, click the PHP 5.0.4 (tar.bz2) link. This is the complete source code package for PHP, so it will take a few minutes to download. Alternatively, you can just use the version on your coverdisc this month.

Clicking the file will prompt you for a mirror to download from; just select the one highlighted in yellow. When the file has downloaded, run *Konsole* to bring up a terminal (go to the Run Command option from the programs menu and run konsole if you don't have a pre-made link to it). This should place you in your home directory by default, so run ls to make sure the file is there.

Now, we have a tar.bz2 file, which is a tarball compressed by the bzip2 algorithm. We can uncompress this with the following command:

```
tar xfj php-5.0.4.tar.bz2
```

The tar command creates and extracts tarballs; we've used the x switch to extract a tarball, the f switch to specify we're using a file, and the j switch, which (bizarrely) means the

Download the tar.bz2 file and save it in your home directory

Running the make command takes a while, but looks very technical – it's great for impressing your boss!

file is bzip2 compressed. If you have a tar.gz file, which uses the gzip algorithm, you should use the z switch rather than j.

That will extract the PHP tarball into its own directory: php-5.0.4. So, run the command cd php-5.0.4 to change to it. Use ls to list the contents of the directory and have a look over what it contains. You should see files such as aclocal.m4, INSTALL, NEWS, along with various directories. Unless you want to start changing the source code of PHP, you needn't worry about most of these. The files in capital letters are text files that explain something: INSTALL contains an install guide, LICENSE contains the end-user licence agreement and so on.

A basic compile

A basic compilation consists of three commands; issuing them will build and install nearly every application out there. So, from within your PHP directory, run these three commands:

```
./configure
make
make install
```

The first command, ./configure, is a check script that examines your system to ensure that you have the requirements for this program. It also detects your hardware and system layout to optimise the program for your computer. If you're missing something, you can usually install that through your package manager.

If you already have libxml2-devel installed, it'll appear in the Mandrake Remove dialog; otherwise, install it

For example, if your ./configure on PHP failed with a message about libxml2, you need to go to Mandrake Control Center and install the package libxml2-devel.

Once your configuration is done, the make command performs the actual compilation. This can take a while – something small like PHP will compile in under five minutes on a modern machine, but something complex like KDE could well take up to 12 hours, even on new hardware.

After make has finished the compilation, you need to switch to root using su. The reason for this is that the program is now compiled, but you need to install it to the system for others to use: type make install to do this. This command should take less than 20 seconds to run, and you will end up with a fully working PHP install – try running php -v to have it print out its version number.

Running configure with the --help parameter outputs a lot of text, so pipe it through less to make it easier to read

Tweaking the options

Running the ./configure command without any options enables the default configuration for PHP. This is OK for most, but if you want something specific you only need ask for it. To see all the options that PHP supports, run this command:

```
./configure --help | less
```

This time the --help parameter is sent to bring up a list of supported options, but the pipe to the less command enables you to scroll through the options at your leisure and pick out a few that look interesting. Hit [Q] to quit and return to the console.

One of the options is --enable-ftp, which switches on FTP support in PHP so that you can write scripts to upload and download data. If you want any others, note them down. To add them into our build, just append them to the configure line, like this:

```
./configure --enable-ftp --enable-pcntl
```

That will re-run the configuration (most of it is cached, so this will be faster). Then, run make and make install again. Linux only ever builds things that it absolutely needs to, so running make this time will leave most of the files unchanged, and only recompile those that need to change to enable your options. ■

LINUX HINTS

■ Use your package manager to update your system to the latest packages before compiling new things. This may give you a better compiler, or at least add new libraries that your programs might need.

■ Always read the INSTALL file that comes with your source code. If this doesn't exist, try the README file.

■ Some more advanced tools require you to pass parameters to the ./configure script; read the documentation thoroughly so you know what you are doing.

■ If you compile something from source, the recompile it later, it will just overwrite the previous build.

■ Check whether your program has an auto-build system like *Konstruct*. *Gnome's* equivalent is called *Garnome*, and works in much the same way.

■ Don't try to mix a pre-built package from your distro with hand-compiled source code, as this can cause version problems.

→ **FURTHER INFORMATION**

Auto-build tools

Some projects ease the work of compiling from source code by providing scripts that download, configure, compile and install

For example, KDE is a gigantic, sprawling system made up of multiple small components; compiling it from source takes a great deal of patience and effort.

Fortunately, the KDE team has an auto-build system called *Konstruct* (**http://developer.kde.org/build/konstruct/**), which handles compilation for you. More importantly, it can also compile KDE into your home directory, giving you a customised build that doesn't affect the rest of the system.

To get started, download *Konstruct* from the link above and extract it to your home directory. *Konstruct* works using the make command – you just browse to the directory that represents what you want, and run 'make' to have it build and install. For example, to build everything, go to the directory meta -> everything -> make. If you only want KDE (and not the development tools or other

What Konstruct installs depends on where you run the make command. We suggest you browse around first, to see what's on offer

periphery), use meta, kde. Both of these take an extraordinarily long time, even on very fast computers – we suggest you do it overnight. Alternatively, individual applications live under the apps subdirectory, which enables you to try out just one particular tool without everything else.

INTERNET SECURITY

Dude, where's my firewall?

Regardless of how you connect to the Internet, you need protection. Dan DiNicolo explains why firewalls are necessary and what you need to look for to keep your system secure

There was a time when firewalls were considered to be within the exclusive domain of large corporations – they were used to keep Internet users from being able to connect to systems within a private network. As the popularity of the Internet grew, however, hackers and script kiddies began to recognise that there were far easier targets out there, namely end users (using both dial-up and broadband connections), who often neglect to secure their computers while online.

In much the same way that you wouldn't leave your car doors unlocked in a public car park, it's absolutely essential to lock Internet users out of your computer by using a firewall. This month we outline why firewalls are necessary, how they work to protect your system, and what features you should be looking for in a firewall to ensure maximum protection.

What a firewall does

At the most basic level, a firewall's job is to control what network traffic can enter or leave your PC. In its most common configuration, a firewall will automatically block all connection attempts to your computer from Internet users, but enable any Internet requests originating from your PC to be completed unencumbered. In other words, a firewall will stop outside users from being able to connect to your system, while making it possible for you to access the Internet unrestricted.

This default configuration works perfectly for most users, but firewalls typically also provide a greater level of control over what enters or leaves your system. For example, you might want to block all outgoing requests from your computer, except those for common services such as browsing the Web, and sending/receiving email messages. In this configuration, a user trying to connect to a service like *MSN Messenger* from your computer wouldn't be able to.

Having a firewall enabled to protect your system is critical for a couple of different reasons. The first is the large number of security threats that Windows systems are susceptible to – unprotected and unpatched systems can often be attacked by Internet users who scan ranges of IP

*Don't worry if you can't find the exception you need – you can define your own*

addresses looking for vulnerable systems. With a firewall in place, these connection attempts are denied by default, a feature known as inbound protection. If your system is not protected, outside users can potentially take control of your computer, root through your personal files and much more.

Second, a good firewall enables you to control what leaves your

---

**→ QUICK TIPS**

Inside Windows Firewall

Follow these tips to enable and configure Windows Firewall
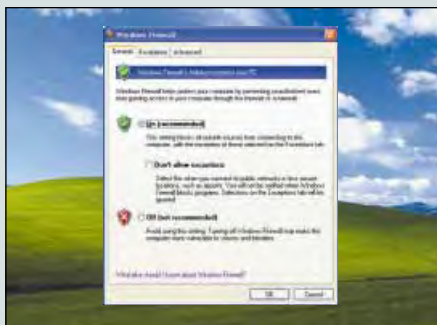
To check if Windows Firewall is protecting your system, go to Control Panel and look for an applet of the same name under Classic View. If it's there, open it to view the General tab, which should be set to On (recommended). If it's not present, install SP2.
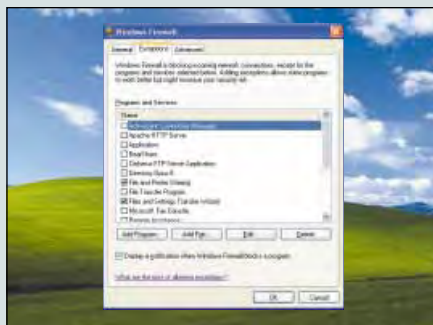
You can control which programs and services should enable inbound connections from the Exceptions tab. Checked items enable inbound connections of that type – when items are unchecked, the connections are blocked. Custom exceptions can also be defined.
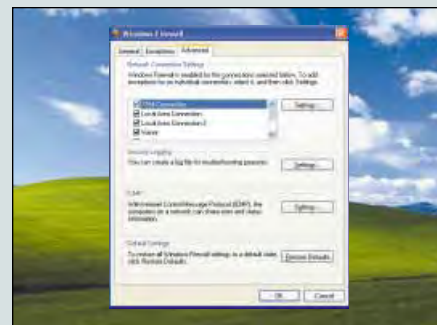
Use the Advanced tab to selectively enable or disable the service for different connections, configure log file settings, and more. Be sure that logging is enabled if you want to track inbound connection attempts to your PC, for example.

→ **IN DEPTH**

The hard way or a soft touch?

What are the major differences between hardware- and software-based firewalls?

If you have a home network and a broadband Internet connection, then you're probably already familiar with the concept of a hardware firewall. Most broadband routers include a firewall feature that many users rely upon as their first line of defence against the dangers of the Internet.

Firewalls included with a router do have some similarities with software firewalls such as *ZoneAlarm*. For example, both enable you to control both incoming and outgoing traffic by configuring rules. By default, both tend to deny all inbound connection requests originating from the Internet, while enabling unrestricted outbound access.

However, there are also differences between the two. Many hardware models tend to rely on the packet filtering capabilities of NAT, which inspects packets against configured rules (see page 132 for more details on how NAT functions). This is in contrast to software firewalls, which use Stateful Packet Inspection (SPI) to inspect the contents of each and every packet, ensuring it belongs to a particular communication session. While the firewall feature of many newer routers now support SPI, most older models do not.

Perhaps the most significant difference between the two is that software firewalls are generally more feature-rich and easier to configure. A software firewall usually supports the ability to enable or deny inbound or outbound access for specific programs, while a hardware firewall controls traffic by its protocol type (and IP address).

If you already have a router with firewall-type capabilities in place, you may want to consider installing personal firewall software on your individual computers as well. While this dual-layer approach can cause communication problems for some programs (notably games), the vast majority of programs and services will continue to function correctly. When it comes to securing your systems, sometimes two heads are better than one.

system, destined for the Internet – a featured known as outbound protection. This is important at a time where both spyware and virus infections continue to wreak havoc on user systems. With the right firewall installed, spyware programs on your system will not be able to collect and forward personal files and/or data from your computer to servers on the Internet, and viruses will have a tougher time trying to mass-mail themselves to contacts in your address book. On the Internet today, having control over what leaves your system is just as critical as having control over what enters it.
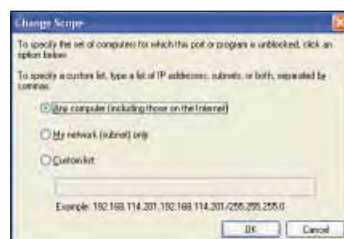
Windows Firewall

If you're using Windows XP and have installed SP2, then all of your system's network connections are automatically protected by Windows Firewall (assuming you haven't installed another personal firewall package). While Windows Firewall offers inbound protection (and enables you to specify which programs or services accept connections from Internet users via a feature known as Exceptions), it does nothing to control what leaves your system – it lacks any level of outbound traffic control. So, if your PC were infected by spyware, it would be able to communicate over the Internet

without restriction. The information being sent from your system might be as 'harmless' as details of the Web sites you've been browsing, but could also be personal information such as your credit card number, or files of your captured keystrokes.

Does that mean Windows Firewall doesn't offer enough protection? Not necessarily. Windows Firewall can be all the firewall protection you need, but only if you're absolutely certain that your system is not infected by a virus, spyware, or other threats. On a clean system, you shouldn't need to be concerned about traffic destined for the Internet, as it would all be requested by you. However, threats such as spyware and viruses are very real, and continue to infect the majority of desktop user PCs. With that in mind, most users need both inbound and outbound firewall protection.

Windows Firewall gives you control over who can connect

*The **ZoneAlarm** personal firewall enables you to control which programs can access the Net*

Firewall alternatives

If you're worried that your system may not be adequately protected by Windows Firewall (or if you're not running Windows XP), then it's time to consider adding third-party firewall software to your PC. There's no shortage of options available, including *ZoneAlarm*, *Kerio Personal Firewall* and others. These products offer complete inbound and outbound protection, while giving you control over elements such as which installed programs are given access to the Internet.

While the paid versions of these products come with a wide range of advanced features (such as the

ability to protect your credit card information or scan email messages for viruses), most are available in free versions that still offer comprehensive inbound and outbound firewall protection, not to mention on-screen notifications alerting your to significant events such as connection attempts from outside users, programs attempting to connect to the Internet on their own, and more. We'll look at free Internet security software packages and their effectiveness in more detail next month. ■

→ **NEXT MONTH**

Will free firewall and anti-virus software keep your system safe?

⚠ HELP! Firewalls exist to exercise control over network communications to and from a network – they do nothing to stop your system from acquiring viruses and/or spyware infections. A firewall is simply an important component in your overall security strategy that must also include the use of updated anti-virus and anti-spyware software.

FIVE MINUTE GUIDE

Faster startup is super simple

Does your computer take an age to get going?
Joe Cassels is here to speed things up

When you turn your computer on, the basic hardware springs to life and does a self check. After this, your PC looks for a boot device, which is normally your hard drive. This starts the process of opening the files necessary to run Windows XP. Once you enter Windows XP, any software that's set to start up with Windows is launched. It then runs continuously in the background, until either you stop the process using Task Manager, or you shut down Windows.

You can cut a few seconds off startup time if you don't have quick boot enabled. Start your computer and press [Del] repeatedly to enter the BIOS. Now look for the option to disable the full memory test or to turn on fast boot. The location will depend on the particular BIOS you have.

A good defragmenting session can also improve startup time, as can a clean-up session, but the best gains can be had from removing unnecessary startup items from the Startup group or in the Run key of the Registry.

Before you head to the Registry to fix your boot items, remember that many programs include an option to disable their startup shortcut. Head to the Options or Preferences section of the program concerned. It's better to edit your program settings than to edit the Registry; the latter option could damage your installation of Windows. Before editing the Registry, make sure you take a full backup of your PC. ■
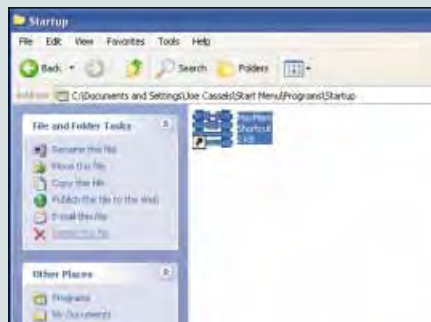
→ STEP-BY-STEP GUIDE

Speed it up

### Crack the whip and make your PC start up quicker
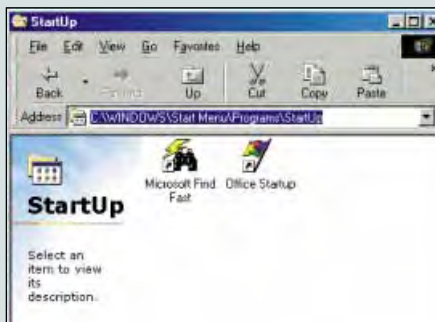
01 Open My Computer and browse to C:\ Documents and Settings\All Users\Start Menu\ Programs\Startup. Here you'll find shortcuts to startup items that launch for all users. In Windows 9x, it's found at C:\WINDOWS\Start Menu\Programs\StartUp.

02 To edit another user's startup group in XP, head to C:\Documents and Settings\[username]\ Start Menu\Programs\Startup. Right-click one that you don't want and choose Delete. This won't show you all startup items, because many are added to the Registry.
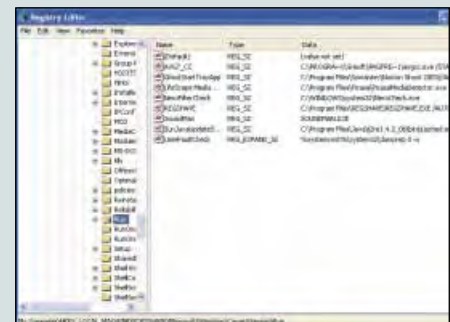
03 Choose Start -> Run. Enter regedit into the open bar. Click OK and expand HKEY_LOCAL_MACHINE to find this key: HKEY_LOCAL_MACHINE\SOFTWARE\ Microsoft\Windows\CurrentVersion\Run. Right-click any entry here and choose Delete to remove it.
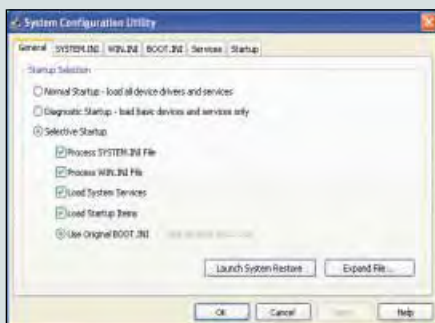
04 Choose Start -> Run and type msconfig into the Open bar. Click OK to launch the System Configuration Utility. Opt for Selective Startup so you can specify which items you want to process before moving onto the startup tab.

05 Press Disable All to remove all startup items. Now close MSConfig and reboot your PC. It should start up much more quickly. You now need to identify which startup entries to keep and which to get rid of.

06 By enabling them one by one, you can identify which ones cause delays. After working out which entries to remove from startup, try to disable them in the parent program, or by editing the Registry. Restore a normal startup in MSConfig.
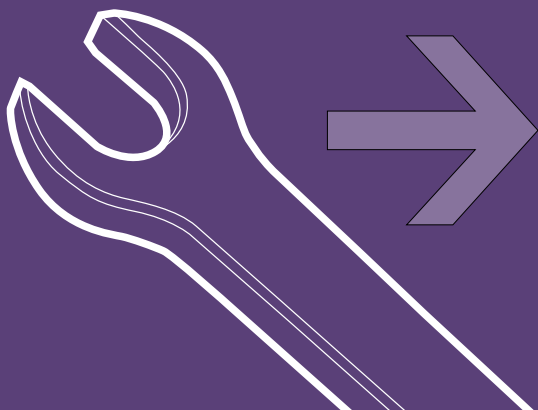
HARDWARE PROJECT

→ Turn a humble Web cam into your very own CCTV camera with little or no fuss and make your home more secure

STARTS ON PAGE 64

'The improvement in Web cam technology has benefits in other arenas, and it's security that's gained the biggest advantage'

SIMON PICKSTOCK
Editor

SIMON'S TIP OF THE MONTH

If you have an iPod, don't leave it plugged in when you turn your PC off. If you do, and turn your PC on again, it won't boot. All you need to do is eject it from iTunes and then make sure you safely remove it from Windows and you'll be OK.

→ **SECTION CONTENTS**

NO-NONSENSE UPGRADE ADVICE !

HOW TO UPGRADE IT

The motherboard is the heart of your PC and all your components connect to it in some way. Upgrading this may sound complicated, but it's not if you follow our guide to upgrading **PAGE 68**

DON'T TRY THIS AT HOME
P70

ADMIN TOOLS

Performance tweaks

Our advanced speed tweaks put you in the driving seat and help you on your way to a faster PC. **Paul Townsend** breaks the speed limit

One common complaint among PC users is the speed of their machines, or more specifically, the lack of it. While your system should perform many of its tasks in a matter of seconds there will be occasions when you experience delays. For example, opening an application or carrying out a particular task may take what seems like an eternity to complete.

Of course, upgrading your PC is one solution, but throwing money at the problem isn't an option that's open to everyone. Fortunately, there are plenty of settings you can adjust within Windows that will go a long way to improving performance. You're unlikely to see the kind of gains you'd experience by upgrading your RAM or CPU, but the changes you make will bring noticeable improvements.

Getting started

Regular hard disk maintenance will go a long way towards improving response times. Getting rid of old applications from both Add or Remove Programs and your startup sequence is a good starting point. You should then remember to defragment the disk on a regular basis.

Your display uses up a large amount of memory, so if you're not worried about aesthetics then go for a basic desktop wallpaper and a minimum amount of icons. In Windows XP go into System Properties, select the Advanced tab and click Settings under Performance. Check the option to 'Adjust for best performance' and you'll be surprised at the difference it makes. With the basics out of the way you can turn your attentions to more advanced techniques for improving performance.

Advanced tweaks

For Windows XP users, each application and process that's installed on the PC is assigned a priority. This determines how much of the CPU power it's allocated. You can see this in action by pressing [Ctrl] + [Alt] + [Del] to open the Windows Task Manager. Select the Processes tab and under Image Name you'll see every item that's running on your system. To change the priority of an item and give it a greater share of CPU power, right-click it, choose Set Priority, then select the level you want it to have. Most items have the Normal setting by default. When increasing the priority of an item, do this one level at a time, then monitor the effect it has.

→ QUICK TIP

An introduction to Autoruns

When you first launch the program it'll display the items due to run at startup that are listed in the Registry and the startup folder. Click View and you'll be able to see which services are also set to run. Select Show Services then click the Refresh button to display them. Remove the tick next to any item to prevent it being included in the Startup process. A useful inclusion in this utility displays all Explorer Addons. Therefore, at startup you have the ability to prevent a range of items loading, such as Administrative tools, Windows Briefcase and the Network connections folder.

→ STEP-BY-STEP GUIDE

Move the paging file

Reap the benefits by reorganising the way your hard drive works

01 With an additional hard disk installed on your system, you can reduce the activity on the primary disk by moving the paging file to the second disk. Less activity means that you'll be able to complete normal tasks more quickly.
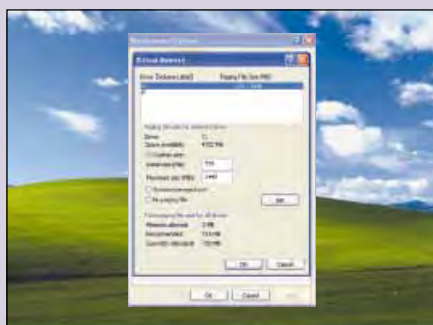
02 Open System Properties, select the Advanced tab and then under Performance click Settings. Select the Advanced tab and under Virtual Memory click Change. Make a note of the current figure in Initial and Maximum size.
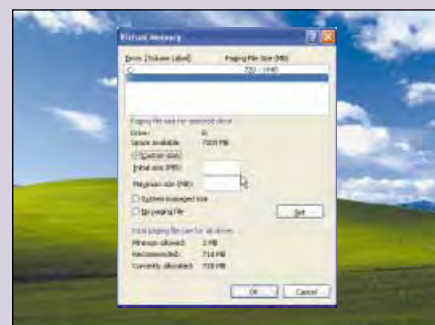
03 Highlight the drive that you want to be used for the paging file then enter the figures for Initial and Maximum size then click Set. Click OK and OK again, then restart your PC for the changes to take effect.

Edit the Registry and choose which of our applications you'd like to run at High priority

Emptying the prefetch folder won't speed up performance, but a selective defrag will

The change you make will only last until the application is closed. When you open it again it'll revert to its default priority level. However, it's possible to make a simple change to the Registry, which will ensure that when an application starts it's given the high-priority setting without you having to make alterations to Windows Task Manager.

Open the Registry Editor and locate HKEY_CLASSES_ROOT\exefile\ shell. Right-click Shell, create a new sub key called runhigh and set its default value to read Run at high priority. Next, right-click the runhigh key and create a new sub key called command. The default value for this should be set to C:\WINDOWS\ System32\cmd.exe /c start "runhigh" /

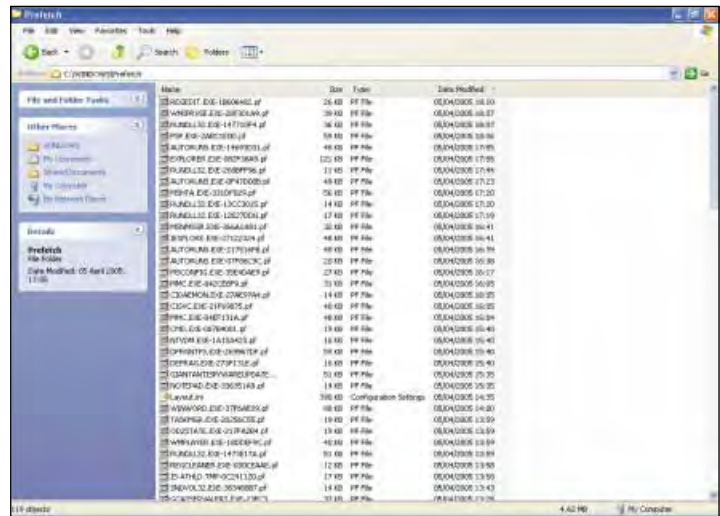high "%1". All you need to do to run an item at high priority is to right-click it and from the menu choose 'Run at high priority'. This can be applied to program shortcuts and .exe files.

The Prefetch process

Windows XP monitors files that are used when your PC starts up and when applications are opened. An index of these is created in C:\ WINDOWS\Prefetch and frequently used items are listed. Prefetching works by enabling your system to access the files it requires more quickly. The process itself is best left alone free from any alterations, as is the contents of the folder itself. However, every three days when your system is idle, the Prefetch process

moves data to the outside of your hard disk in an attempt to improve loading time. If you wish, you can perform this process manually using defrag.exe at the command prompt. Type defrag c: -b to optimise your boot files.

Startup woes

There's nothing worse than a slow-starting PC and it's the one area where users strive for a significant improvement in performance. Delays are often caused by applications trying to launch simultaneously with Windows. Your routine maintenance should put paid to any unnecessary programs and reduce the number of items trying to start.

You can also use the System Configuration Utility. Click Start ->

Run, type msconfig and press [Return]. The Startup tab lists all those programs set to run and removing items is simply a case of unchecking a box. Along with programs, you'll have background processes or Services running at Startup. Rather than using the System Configuration Utility, you may find it easier to manage all these items with the help of a specialist utility such as *Autoruns*, a 150KB utility that you can download from **www.sysinternals.com/ntw2k/ freeware/autoruns.shtml**. ■

→ NEXT MONTH

Memory management made easy.

→ STEP-BY-STEP GUIDE

Speed up printing
Get your hard copy quicker by improving the printer spool setup
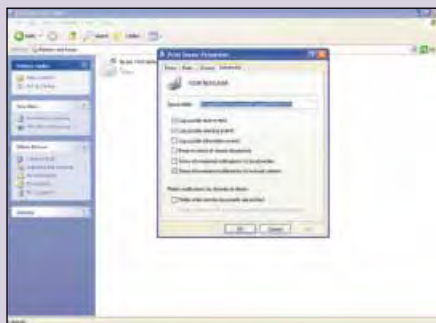
01 An additional hard disk can be used as a new location for the printer spool directory. For all installed printers, open Printers and Faxes in Control Panel. Click File -> Server Properties, select the Advanced tab and enter a new path.
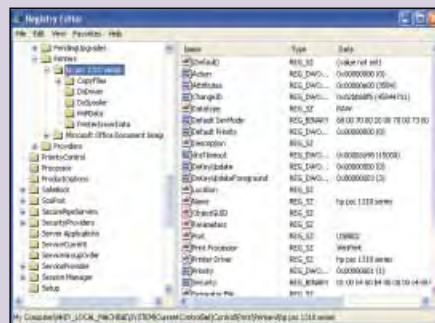
02 With more than one printer installed, you can specify the spool directory for each one. Open the Registry at HKEY_LOCAL_MACHINE\ SYSTEM\CurrentControlSet\Control\Print\Printers\ PRINTERNAME and select the key for the printer.

03 Right-click the SpoolDirectory String value in the right pane and set its value to equal the path of the spool directory location. You'll then need to use My Computer to create the spool directory folder at this location.

ADMIN TOOLS

Want to manually remove programs from XP?

When an uninstallation goes wrong, find out how to rid your system of all the files that have been left behind. Paul Townsend is on a mission

Performing regular maintenance on any PC is essential to keep it in good working order. Whether it's removing old files or defragmenting the hard disk, chores like these help to keep Windows XP running smoothly. Unfortunately, while you're carrying out your housekeeping, there will be times when you run into problems, particularly during the removal of unwanted software applications. An error message during the deletion process or an uninstaller that doesn't work correctly can be infuriating. It may even be the case that the application you installed didn't come with its own removal feature. You can often be left in a state of limbo, with files on your hard disk related to a program that doesn't work any more.

An uninstallation can fail for any number of reasons. It could be that the software vendor hasn't thoroughly tested the uninstallation aspect of their program. Alternatively, it could be that a file required by the uninstaller and related to the program has long since been deleted from your PC. If you're in the situation where program removal has failed you can try a few things before it's necessary to embark on manual deletion of files.

Try being safe

First, you can attempt the uninstallation again – this time in Safe Mode. The reason for initial failure could've been that a file was locked or in use, which would have prevented you from completing the process. By booting up into Safe Mode you'll have unhindered access to files. If this doesn't work, you can try installing the application again from scratch. Sometimes, at the beginning of a program installation, you'll have

IF YOU SHARE YOUR PC IT'S IMPORTANT THAT YOU PAY CLOSE ATTENTION TO WHAT'S BEING ADDED TO YOUR SYSTEM

the option to remove any related files that are currently on your system. Alternatively, you can opt for a repair or reinstall, after which you can attempt the uninstallation process again.

If you share your PC with other users it's important that you pay close attention to what's being added and removed from your system. It can sometimes be the case that the Add or Remove Programs feature fails because the item in question no longer resides on your hard disk – all

traces of it have been uninstalled apart from the program name in the Add or Remove Programs list. If you find yourself in this situation, you'll need to use the Registry Editor to delete this rogue entry and prevent confusion again in the future.

→ **QUICK TIPS**

When an uninstallation goes wrong...

It needn't be the end of the world, or even the end of your PC

→ **Use My Computer to browse the contents of C:\Program Files** and you'll see directories of applications long since removed. Even when an uninstaller works files are often left behind. Identify those you don't need and manually delete them.

→ **A partial uninstallation will leave shortcuts on the All Programs menu and the desktop.** To clear the menu, right-click an item and choose delete. Use the same technique on the desktop or use the Desktop Cleanup Wizard to remove old items.

→ **Startup references to old programs can lead to error messages when you boot your PC.** Make sure there are no shortcuts in the Startup folder or on the All Programs menu. You can also remove entries from the System Configuration Utility.
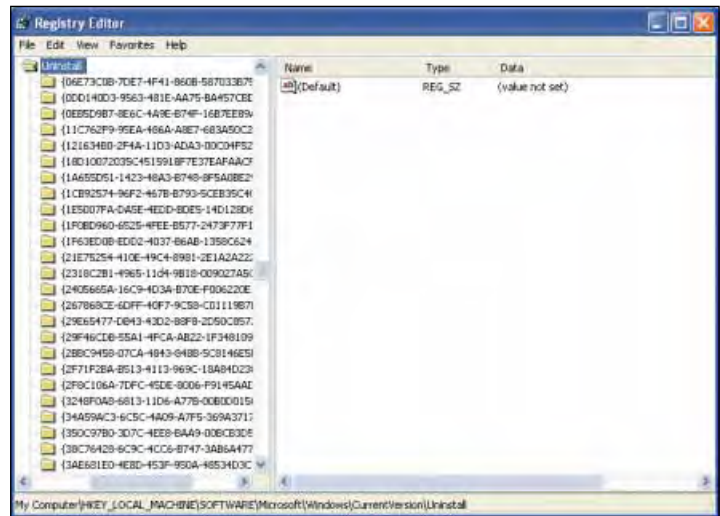
Errors during uninstallation mean you'll have to complete the processes manually

Edit the Registry to delete stubborn entries from the Add or Remove programs list

First locate the key HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall. Each sub key that you see represents an application that's installed on your system. The sub keys are labelled with unique identification numbers – this means that you won't be able to see what they relate to at a glance. Instead, go through them one at a time and the String value called DisplayName will divulge the name of the application it relates to. Once you've identified the sub key for the program you want to remove, simply right-click it and choose delete. When you return to Add or Remove Programs you should see that the stubborn application has finally been removed.

Manual removal

Sometimes when a program uninstallation fails, you're left with no choice but to remove the file remnants yourself. Unfortunately, sitting back and taking no action can lead to problems in the future. You may experience error messages at startup, or during normal use. Your first task will be to remove the folder related to the application in C:\Program Files. In most cases this would've been left behind anyway, even if the uninstallation process had worked correctly. Locate the folder related to your program, right-click it and choose Delete. If you have problems finding it, then try looking under the name of the software vendor instead.

Of course there will be other files left over as well. Use My Computer to browse to C:\Documents and Settings\All Users\Start Menu\Programs and delete any folders and shortcuts that are listed. If your PC is shared then you may have to perform the same check for each user at C:\Documents and Settings\UserID\Start Menu\Programs. There's a chance that your application may have been part of the startup process so go to C:\Documents and Settings\All Users\Start Menu\Programs\Startup and delete any entries. Again, if there are other users on your system you'll need to try C:\Documents and Settings\UserID%\Start Menu\Programs\Startup and delete relevant entries as well. There will also be

system files left behind by a partially installed application, in particular DLL files. These can be difficult to identify manually, as they're often obscurely named. Take a look at our step by step guide on the next page for an application that helps you locate and safely delete such files.

Registry work

When an application is installed, it'll also record information in the Registry. Even if an uninstaller doesn't fail during the removal process you're still likely to have keys and values present for applications that have long since been deleted from your system. You can begin by using the Registry Editor to locate HKEY_LOCAL_MACHINE\SOFTWARE. The sub keys you see will

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→ **QUICK TIPS**

... here's how to make it right

→ **When you delete files manually, you may find some are locked or in use. Press [Ctrl] + [Alt] + [Del] to launch Windows Task Manager and** stop any related processes that are running. Or, boot into Safe Mode and attempt deletion again.
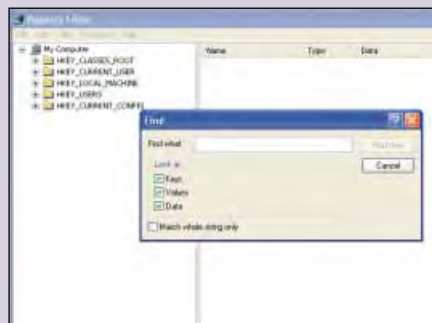
→ **You can use the Find tool to identify more Registry entries related to your program.** Open the Registry Editor and highlight My Computer. Click Edit -> Find, enter the app's name and click Find Next. Press [F3] to continue searching.

→ **The Search tool can also be used to locate other files related to the program that may** be on your system. You can use a wildcard search to help you identify certain files. For example, type acme.* to find file types with the name acme.

→ FURTHER INFORMATION

Best practice techniques
Delete, repair and restore with confidence

The course of action you've embarked on will have been forced upon you thanks to an uninstaller that didn't do its job. The fact that you're now having to manually delete files means that you're leaving the safe environment that's normally provided by the automated removal process. Unfortunately, identifying Registry keys and values and then deleting them, along with now redundant files, does place the stability of your PC at greater risk.

The overzealousness of your actions, coupled with the inexperience of working so closely with system files, could cause difficulties. As a result of your cleanup methods you could find new error messages appearing, or worse – still be in a position where your system won't boot. If you do experience problems as a result of your housekeeping, then you'll need to know what action to take to rectify the situation. If you've deleted files in error then check the Recycle Bin and if they're present you'll be able to restore them. Alternatively, use a specialist utility such as *Restoration*, available free from **www.geocities.jp/br_kato**. This'll enable you to restore items that have been removed from the Recycle Bin or deleted permanently.

If overall system behaviour is erratic after you've manually deleted files, a more drastic course of action may be required. You can use the System Restore tool and the settings that were in place when Windows XP was working correctly. Alternatively, you can use the System File Checker to replace any system files that may have been deleted. Click Start -> Run, type sfc /scannow and press [Return]. As a last resort you can repair your entire Windows XP installation. Boot from your Windows XP CD and when you see 'Welcome To Setup', press [Return] to set up Windows XP. Accept the license agreement and then press [R] and repair your existing Windows installation.
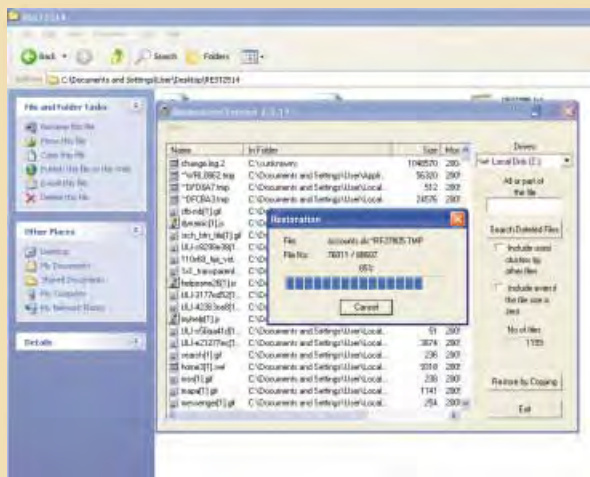
Use Restoration to retrieve files that you've deleted in error

be related to the software vendor and then there will be further sub keys, one for each of the applications you've installed. Right-click the application sub key, or indeed the vendor sub key, and choose Delete to remove any reference.

The Startup tab of the System Configuration Utility may also contain a reference to the program you want to remove. While clearing the checkbox from alongside an item will prevent it from being called upon when Windows XP boots, you'll need to delve into the Registry to clear the instruction itself. There are two locations where startup information is stored. First go to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Run, then to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Shared Tools\MSConfig\startupreg. There will be a sub key for your program and you should right-click it and choose Delete. If you're not too enamoured at the thought of making changes to the Registry, we'll be looking at a specialist utility that'll identify redundant entries that you'll be able to delete safely.

Hidden applications
Having browsed the applications listed in Add or Remove Programs you'll have noticed that the likes of Windows Messenger and Games aren't listed. While they are present if you click on Add/Remove Windows Components, unchecking the boxes next to these items will only serve to

→ STEP-BY-STEP GUIDE

Remove stray DLL files with DLL Archive
Download the program from www.analogx.com/contents/download/system/dllarch.htm

01 If you don't use Add or Remove Programs to uninstall an application, some of what's left behind is easy to identify. The likes of DLL files, however, will prove more difficult to track down, but utilities such as *DLL Archive* can make it easier.
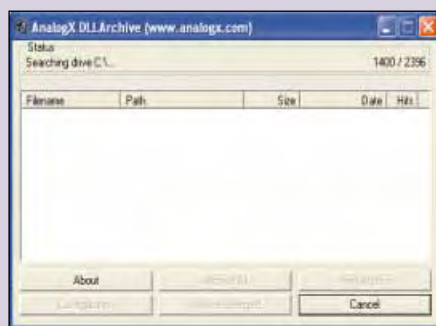
02 Having installed the program, click Search and your system will be analysed for DLL files that don't have references to anything else that's on your PC. The process can take some time to complete, so be patient.
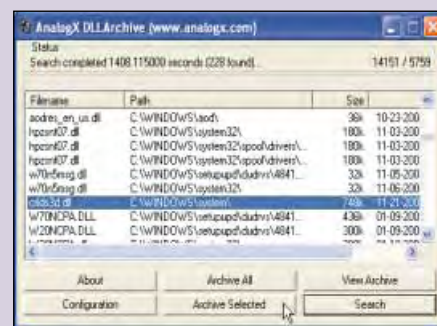
03 Select the file(s) you want to get rid of, then click Archive Selected. This is safer than full deletion, because if you have problems in the future you can restore the file back to its original location. To do this click View Archive, then Restore Selected.
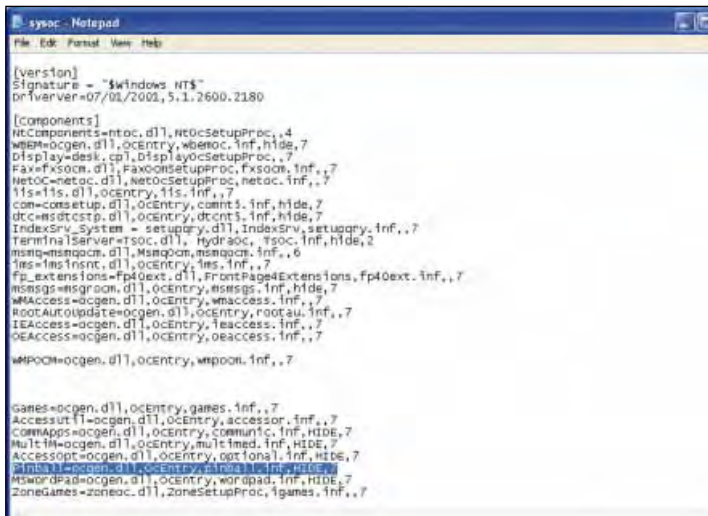
Locate the file C:\Windows\inf\sysoc.inf and you can make hidden items visible

remove shortcut links from the desktop and Start menu rather than uninstall the programs completely. There is a full uninstallation facility available for these applications, but it's deliberately hidden from view in Add or Remove Programs. The official line is that it prevents the inexperienced user from removing them by mistake. However, it's more likely that it's a way of ensuring you stay faithful to Microsoft products. If you'd rather have these applications made visible so you can make an informed choice then this is quite straightforward. You'll need to make a slight change to one of your system files. Use My Computer to locate the file C:\Windows\inf\sysoc.inf. Double-click to open it and you'll see a long

list of items. Alongside some of them will be the word 'hide'. It's this that's preventing the related application from being seen. You can make the hidden items visible in Add or Remove Programs by deleting the word 'hide' next to a particular item and save the changes you make to the sysoc.inf file.

A helping hand

If the Windows Installer has been used to install an application onto your system and the removal process subsequently fails, getting rid of the files left behind won't be as difficult as you might think. At your disposal is a tool provided by Microsoft called the *Windows Installer Clean Up Utility*. It's just one of the Windows Support Tools that you'll find on your original

Windows XP installation CD. To access the tool, you'll need to install the entire set of tools. To do this, insert the CD in your drive and browse to the Support\Tools folder and double-click setup.exe to install them. Opt for the Complete installation as this gives you twice as many tools. They'll be located at C:\Program Files\Support Tools and to launch the *Windows Installer Clean Up Utility* you'll need to double-click msicuu.exe. Alternatively, if you don't have your Windows XP CD to hand you can download a standalone version of the utility by going to **http://support.microsoft.com/kb/290301**. This is a slightly updated version of the program, which can identify more installed components.

Using the utility is straightforward – simply select the application that wasn't uninstalled correctly then click on Remove. A prompt will then appear advising you that the particular item will be removed from your PC. Click OK to continue and all that program's files and Registry entries will be removed from your system, together with its listing in Add or Remove Programs. If you wish you can hold down [Ctrl] and select multiple items for removal. It's important to note that after the *Windows Installer Cleanup Utility* has been run to remove a partial uninstallation, you won't then be able to add or remove any components or attempt a repair of that same program. It will be necessary to reinstall it again from scratch. ∎

→ **NEXT MONTH**

Deployment tools, slipstreaming with Service Pack 2 and creating a Windows CD that will install Windows XP automatically.

→ **STEP-BY-STEP GUIDE**

RegScrubXP will buff up your Registry

Go to www.lexundesigns.com and find out more about RegScrubXP
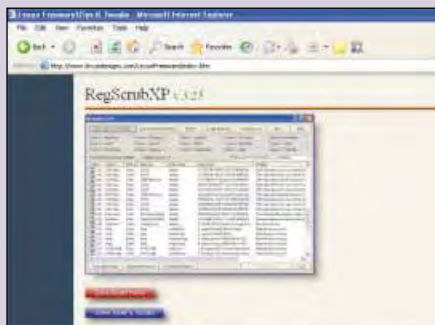
01 If you'd rather not identify redundant Registry entries manually, *RegScrubXP* will do the hard work for you. Click on 'RegScrub XP Finds Problems' and wait while your system is analysed.
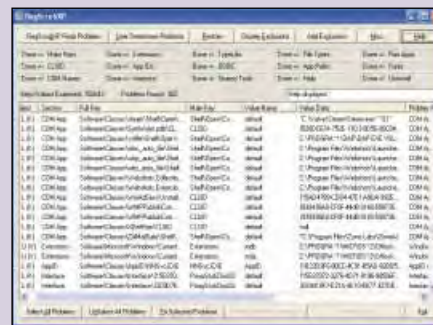
02 Examine keys and values identified by the scan before you delete them. The info in the Value Data column will help you decide whether or not to keep an item. Check the box next to the item you want to remove and click Fix Selected Problem.
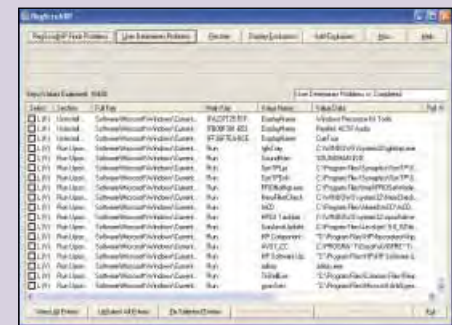
03 If you click 'User Determines Problems' instead, the program will list all Registry entries from common problem areas. These haven't been identified as problems yet – you must determine whether or not further action is required.

FIREFOX TWEAKING

Ten must-have tools

Want to take Firefox to the next level? **Nick Peers** reveals the most desirable add-ons and utilities

L ike all good browsers, *Firefox* is just waiting for you to expand its capabilities with the help of an extension or two, and we've showcased ten of our favourites here. To find more, select Tools -> Extensions and click 'Get more extensions'. Some aren't immediately visible after installing – try choosing View -> Toolbars -> Customise, where you should find your extension as a button, ready to place on the main toolbar.

Speed up your downloads

We've found not one, but two tools that help improve your download experience. The first, *Download Manager Tweak Extension* (**http://dmextension.mozdev.org**), adds extra functionality to the existing Download Manager. For example, you can open it in a sidebar or tab for easier access and it adds new buttons to make it simpler to use.

If you'd like to tie in *Firefox* to a download manager, try *Star Downloader* (**www.stardownloader.com**), which has recently been updated to full compatibility with Mozilla browsers. It can speed up downloads by splitting

them into multiple parts and downloading from a variety of different locations.

Block ads

Firefox already features a pop-up ad blocker, but the *Adblock* extension (**http://adblock.mozdev.org**) takes it further and helps you to block ads within normal browser windows.

Control your tabs

Firefox's tabbed browsing is a major attraction, but it's even better with *QuickTabPrefToggle*, giving you access to *Firefox's* hidden tab preferences. Best of all is the ability to open all new pages in tabs as opposed to new browser windows. Download it from **http://jedbrown.net/1.0/mozilla/extensions/**.

It's raining again

Keep an eye on weather with the help of *ForecastFox*, which you can install from **http://forecastfox.mozdev.org**. Once you've relaunched *Firefox*, you'll be prompted for your location, and you'll soon have little weather

NEW SERIES!

SECURITY • SECURITY • SECURITY • SECURITY •

symbols adorning your *Firefox* window – hover the mouse over them for more detail.

Spell check

If you post on forums or use online forms to enter information, you may wish to have the safety net of a spellchecking tool. *Spellbound* (**http://spellbound.sourceforge.net/**) is one of the best. To put it on your system, click the Installation link, click the *Firefox* logo next to your version of *Firefox*, then follow the instructions. Once installed, access Tools -> Extensions, select Spellbound and click Options. You'll be pointed in the right direction to download a dictionary to go with your new tool.

View in Internet Explorer

If you stumble across a Web page that only works properly in *Internet Explorer,* this extension (**http://ieview.mozdev.org**) enables you to right-click the page and view it in Microsoft's browser.

I can hear music

FoxyTunes links in with most popular music players to enable you to control your player from within *Firefox* itself. Find out more and download from **www.iosart.com/foxytunes/firefox/** – once installed, the media controls appear on the bottom rim of the *Firefox* window, but you can drag it to the top if you so wish. To link it to your media player, just click the music icon and choose Player -> Select to access the full list.

Take a note

QuickNote (**http://quicknote.mozdev.org**) makes it possible to select some text, right-click it and send it to *QuickNote* with the URL appended to the end. Perfect if those who use the Web for research purposes – like us... ∎

SPEED IT UP

Use FireTune to optimise Firefox

A handy free tool called *FireTune* can optimise *Firefox* for your setup. Download it from **www.totalidea.com/freestuff4.htm**. Open Firefox and select Tools -> Options -> Privacy. Click the Clear button next to Cache and click OK. Browse to **www.numion.com/stopwatch/** and run a speed test on **www.mozilla.org/products/firefox/**. Make a note of the time taken.

Close *Firefox* and install *FireTune*. Launch the program and click 'Create backup of configuration', in case you need to return to the original settings. Choose the setting that most closely describes your PC and Net connection. Click Tune it, followed by Yes and OK. *FireTune* will tweak *Firefox*, and you can verify that its tweaks have worked by relaunching *Firefox*, clearing the cache again and running the same speed test as before. You should see a performance gain – restore your original settings if you don't.
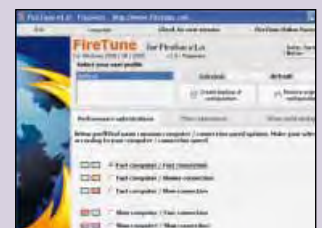
Use* FireTune *to give* Firefox *a welcome speed boost
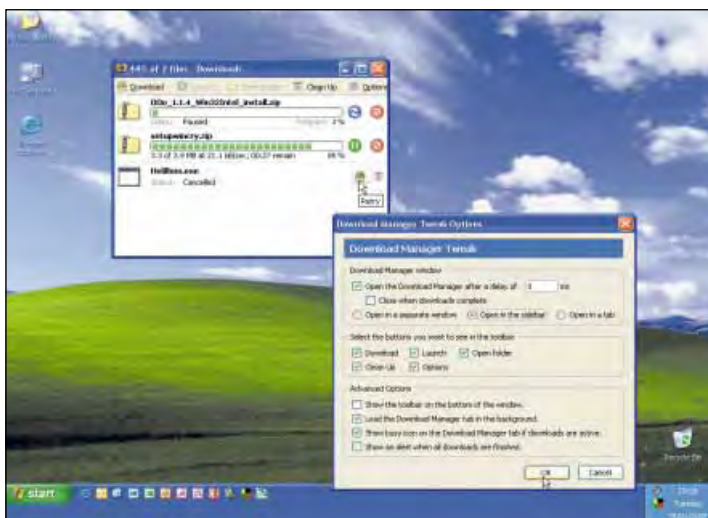
Revamp* Firefox's *Download Manager with this clever little extension

HOW WINDOWS WORKS

Crashes explained and prevented

ON THE CD

Why is your PC so unstable and is there any way you make it more reliable? **Mike Williams** explains all in this helpful crash course

→ IN DEPTH

Hardware hell

Crashes aren't always down to your software

Program bugs are a major cause of PC crashes, but they're not the only one. Hardware problems can make your system appear unstable. If your crashes seem random or you're experiencing spontaneous reboots with no error message, then some kind of hardware fault could be the cause.

So how do you find out for sure? Simplifying your system is a good place to start. Unplug or remove anything non-essential that's plugged in to your PC, and look for any improvement. Running a few hardware diagnostics might help, too. *SiSoft Sandra* (**www.sisoftware.co.uk**) has lots of tests it can run, and you can check for RAM problems with tools like *DocMemory* (**www.simmtester.com/PAGE/products/doc/docinfo.asp**), *MemTest* (**http://hcidesign.com/memtest**) or *Memtest86* (**www.memtest86.com**).

Windows also collects information that may help track down the cause of crashes, although this is often hidden away. Device Manager (Control Panel -> System -> Hardware) might reveal hardware conflicts, for instance, and the Event Viewer (Start -> Run -> eventvwr) can be particularly helpful.
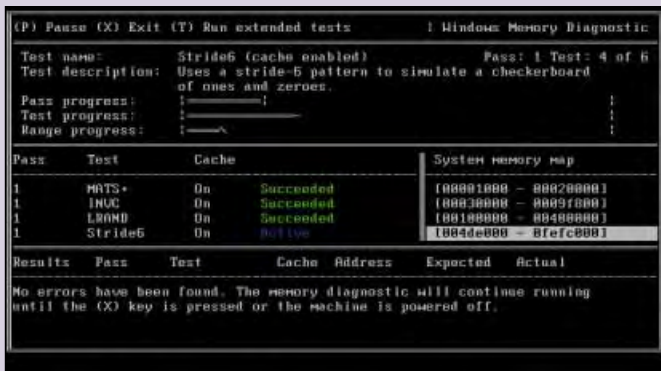
Perhaps the best resource is Microsoft's Knowledgebase, though, which contains articles designed to assist your hardware troubleshooting efforts. Either search directly at search.microsoft.com, or let a site like LabMice guide you (**http://labmice.techtarget.com/windowsxp/TroubleshootingXP/hardware.htm**).

*Leave Microsoft's RAM tester running overnight to detect any intermittent memory problems (**http://oca.microsoft.com/en/windiag.asp**)*

At the Windows XP launch we were told that it was the most stable, reliable version of the Operating System ever to be released. Four years down the line it really doesn't feel like that, does it? Most people still experience application crashes on a regular basis, and it's not exactly unknown for Windows itself to fall over, either. Not much sign of stability there, then.

Other programmers have tried to fill the reliability gap with their own software: Windows add-ons that promise to help you recover from crashes or stop them happening at all. The prospect of never losing any work again, ever, is undeniably attractive, but it's also utterly false.

Windows Error Reporting could help you find out exactly why your PC is crashing

The reality is that you can work to reduce the number of times your PC crashes, but nothing will prevent all of them. In fact you don't want to do that because – believe it or not – most crashes are actually the best possible outcome of a tricky situation. Why? A little background will help to explain.

Exception handling

Imagine that you're running a simple statistics program which enables you to enter the details of a group of people and displays their average age. Nothing too complicated behind that,

right? The program just totals up their age, divides by the number of people and that's it.

Let's think again. What if you click Display average before you've entered any names? If the program doesn't check for this, then it might try to divide zero by zero. This doesn't have a numeric answer (10 zeroes, 100 zeroes, 1,000 zeroes are all still zero), so what can the program do next? It 'raises an exception', in programmer-speak. That means that it sends a message saying, 'I can't continue, something unexpected has happened, and I need some advice on what to do next.'

In most cases the application will include its own exception handler: a small chunk of program code that will receive the error and process it. If the programmer has planned well then it'll give you a helpful error message
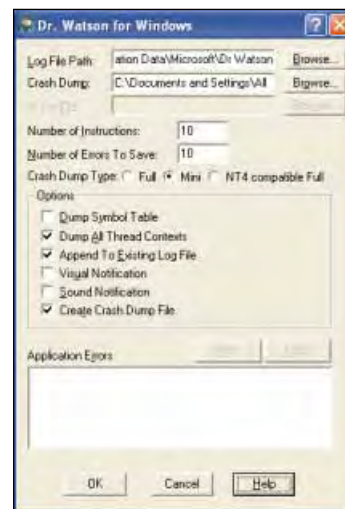
Knowledgeable Windows users might find Dr Watson handy for diagnosing crashes. Click Start -> Run and launch Drwtsn32 to find out more
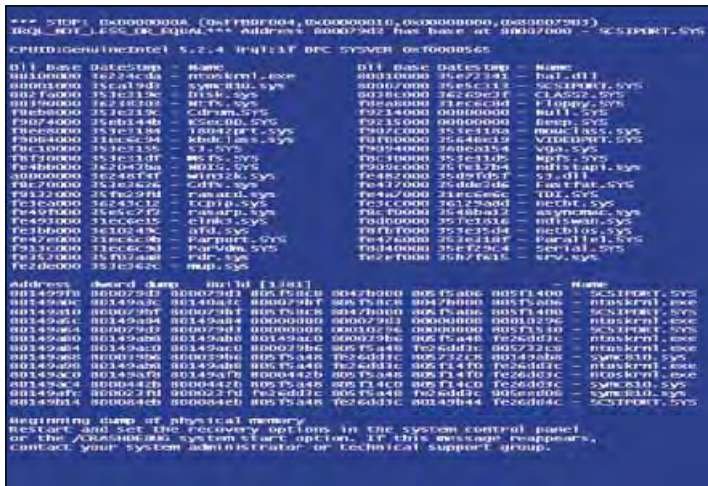
Some blue screen error messages come packed with information, but generally only the first couple of lines are actually any use

('Please enter at least one name and age first'), and enable you to continue.

However, if the application doesn't have an exception handler then the message will filter through to the OS instead. Because Windows knows nothing about your application or how it can recover, the only option is to close it down.
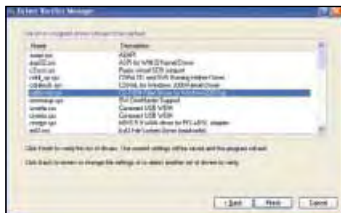
Developers should try the XP Driver Verifier (Verifier.exe) to identify drivers (see http:// support.microsoft.com/?kbid=244617)

This is a trivial example, but imagine what might happen if you were running a disk defragger and it was calculating where it ought to move a particular chunk of data on your hard drive. What if there was a mathematical error here, with no exception handler to correct it? You can't simply say, 'Oh well, we'll continue and just write to sector zero,' or your entire hard drive could be corrupted. In a situation like this, displaying an error message and killing the program is for your own good and there really is no alternative.

User vs Kernel mode
If unhandled application exceptions were the only problem, then deciding what's caused a crash would be easy. However, you won't be surprised to hear it's a lot more complicated than that and it's all down to the way Windows uses memory.

Usually this works just fine. When you launch an application, Windows runs it in what's called 'user mode', which means the program runs in its own, protected area of RAM. Every user mode program can only read and write to its own chunk of memory, which means it can't accidentally corrupt anything else.

Some programs need more direct access to system data, though, and so the Windows kernel, your device drivers, and low-level system utilities such as firewalls and anti-virus tools live in Kernel mode instead. A bug in anything running at this level can corrupt system information, but that won't necessarily result in an immediate crash. You might keep using the PC for some time, until eventually there's a crash in some other part of the system and you're forced to reboot.

So how can you ever hope to find out what might be causing your PC to crash? It may not be easy, but Windows does have a couple of options that just might help.

Online crash analysis
Windows XP introduced an online error reporting feature, where details on your crash are sent to a Microsoft
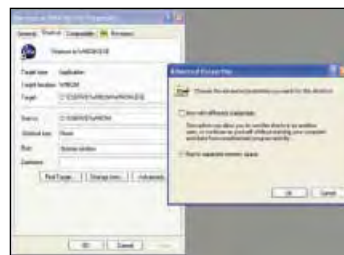
Crashes in 16-bit software can affect your whole PC. If you still run any, right-click the shortcut, select Advanced and check 'Run in separate memory space'

Fix almost anything
The only crash-avoidance tips you'll ever need?

Many common PC crashes can be avoided with a little basic system management advice. Here are our favourite five tips to get you started.

01 Corrupt *Internet Explorer* cache files can cause problems when browsing, and affect other applications. Keep the cache size to 500MB tops (Tools -> Internet Options -> Settings), and wipe the cache if *IE* is misbehaving (Tools -> Internet Options -> Delete Files).

02 The more software you've got installed, the more conflicts you're likely to have. Browse your Start menu and the Control Panel's Add/Remove Programs applet, and remove anything you don't use.

03 Try to keep the programs you have running at one time to a minimum, too. Make sure the System tray includes items for essential software only.

04 Most PCs are packed with temporary files that should have been deleted long ago. Use Explorer to locate and erase them manually (wipe everything in \Documents and Settings\ UserName\Local Settings\Temp, but be sure not to accidentally delete anything else).

05 Keep an eye on upgrades as they're released for Windows, and all your favourite software. Don't download them automatically (except for security patches), as there's no point fixing what isn't broken. However, it pays to find out when known problems have been fixed.
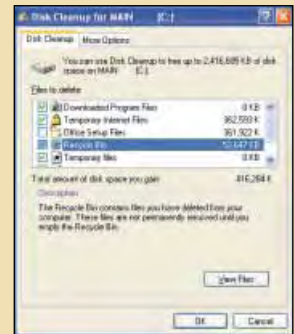
Windows becomes unstable if hard drive space is really low, but the disk cleanup tool can help (Start -> All Programs -> Accessories -> System Tools)

site for analysis. Some people turn this off because they think it's a hassle, or a privacy concern, but they're missing a lot. Using it doesn't involve handing over details like your email address and it could just provide an explanation for repeated PC crashes.

If you'd like to give this a try, open Control Panel and click System -> Advanced -> Error Reporting. Select Enable error reporting, then check 'Windows operating system' or 'Programs', depending on the crashes you'd like to trap.

Now you're done, continue using the PC as normal. If a crash occurs, the Error Reporting tool will pop up to tell you exactly which component has failed. Follow the 'click here' link if you're technically inclined, then follow the next link 'to view technical information

about the error report' and you'll see a complete list of DLLs and other files running at the time. There's a memory dump for you to browse, too.

That's a little too much information, so an easier option is to click 'Send Error Report' instead. Let the reporter send its information over your Internet connection, then click Close, and select the 'More information' link. This is the clever part. Because Microsoft has received millions of these reports, it can recognise and report on common errors and their cause. With any luck you'll be taken to a Web page that tells you the likely reason for the error and what to do to fix it. No guarantees, of course, but if your PC has been misbehaving recently then this has to be worth a try. ■

HARDWARE PROJECT

Secure your home with a Web cam

Time-wasting games and video-conferencing are no longer the sole reason for investing in a Web cam. **Mike Abolins** examines the security option

Remote monitoring and motion detection

Setting up your PC and Web cam to protect your home

Creative's *WebCam Center* software, bundled with each of the company's Web cams, contains just about everything you need to use your Web cam as a security device. There are two options open to you in this regard: first, to have your Web cam active constantly, uploading images to a Web site or FTP site on a regular basis, or second, to have it activated by motion, only capturing and uploading shots when triggered.

Each option has its advantages and disadvantages and is suitable for different circumstances. The former can be handy for monitoring a babysitter for instance, or for wide-angle views when the motion detection isn't precise enough. The latter is obviously most suited for protecting your PC or a car, for example. The Web cam is only activated and begins to capture images when it's triggered by movement and you can go so far as to specify the area of the camera's view in which that movement is monitored. This is particularly

handy if there's a busy road outside a window that's in the Web cam's field of view; you can literally tell the Web cam software to ignore it.

Whichever option you select, you'll need an FTP or Web site to which the captured images and video can be uploaded. With the motion detection software, the first frame can be sent in an email to an address you specify, but otherwise you'll need somewhere for the footage to be sent. A simple site-building wizard is included in *WebCam Center* that's pre-configured to receive any captured images and video.

Not only are there security benefits, but you can also add a Web cam page to your personal site

You may remember the amusing story of the burglar who was photographed by a Web cam connected to a PC that he was stealing. It made all the news broadcasts (**http://news.bbc.co.uk/1/ hi/magazine/4276851.stm**) and highlighted a particularly cunning use for the diminutive, under-appreciated Web cam, one that's a far bigger part of its arsenal than most people are aware.

It must be said that the main use most people put their Web cams to is video-conferencing or broadcasting a live stream onto the Internet. However, Web cams are capable of far

dimensions, CCD-enabled Web cams provide you with a greatly improved picture that's more detailed, more richly coloured and, most importantly, more flattering. These CCD Web cams also have other features such as improved lenses that provide a wider field of view or even, in the case of the Logitech QuickCam Sphere, have the ability to follow you around the room.

Increased amount of data

Of course, this added functionality comes at a cost, largely in the amount of data that's being generated by the Web cam. Whereas a standard CMOS camera might generate images that

IT'S TAKEN THE EMERGENCE OF 1 AND 2MBPS CONNECTIONS TO UNLOCK THE POTENTIAL OF THESE NEW WEB CAMS

more than that and the technologies that complement the cameras – like the Internet – are improving too. This means that that there's much more that can be done with them.

The two most exciting uses for Web cams today are turning your PC into a videophone and protecting your home. The former can be achieved with the use of a cheap Web cam and free instant messaging client, involving little outlay and advanced set-up. Take this route, though, and you'll be missing out.

Today's high-end Web cams are often built around CCDs, the very same image-capturing processors that you find in digital cameras. Replacing the lower-resolution CMOS sensors, whose main strength was their slim

measure in the tens of kilobytes, a CCD model can produces ones numbering in the hundreds. Transmitting these images via a 56k dial-up Internet connection is an impossibility and it can be troublesome even on a 512Kbps broadband connection if you've got other applications online, too. It's taken the emergence of 1 and 2Mbps connections to unlock the potential of these new Web cams, enabling users to transmit and receive high-resolution, high-frame rate video while they talk online.

The improvement in Web cam technology has benefits in other arenas alongside the videophone, too, and its security that's gained the second-biggest advantage. The

software that powered a Web cam, enabling it to detect movement and automatically start recording what it sees, isn't new, but the improved optics have taken this older technology and given it a new lease of life.

Web cams have also morphed into more dedicated security devices. Boasting infra-red lenses and other low-light technologies, these cameras are flexible, low-cost options that transform your PC into the hub of a sophisticated security system. Aided by an always-on broadband connection, pictures from these cameras can be uploaded to an email address or Web site. Then, if your PC is stolen or you're away on holiday, you've always got access to the video and photos that your cameras have captured.

Whichever use is of more interest to you, or even both, you don't need to splash out a lot of cash to make it happen. Here, we'll look at what you need and show you how to get up and running with a regular Web cam and something a little bit more sophisticated. We'll also take a look at the software and Web services that are available to help you in your cause.

→ **FURTHER INFORMATION**

Tuning in online

Upload your video streams to the Internet and keep an eye on your home and its contents while you're away

Once your security camera is up and running, you'll want to make full use of its capabilities by having your PC upload its video and image captures to the Internet. This necessitates you having a repository for the content, as you can't have the images uploaded in an email, ready for you to download at a later date. You'll need a Web site or FTP site in order to fully capitalise on the cameras.

If you've got a Web site already, then you're already in business. You can use the Web cam's control centre software to configure it to upload pictures from your camera at set intervals, or whenever it detects movement. You could quite simply add an extra page to your existing site and either password protect it or keep it hidden by not including any links to it on your main page.

If you don't have any Web space (not even provided by your ISP), then now may be the time to look at investing in some. You can obtain 100MB of space with a bandwidth limit of 2GB a month for £5 a month from **www.simply.com**. You won't need any site building software as most Web cams – including the Creative and Trust models featured in this article – include the necessary software for providing a destination for your images and video. When it's set up you can leave your PC and the software running and, by visiting your Web site in any Internet browser anywhere in the world, see live or recorded video and images of your home.

A collection of templates makes building a Web cam-compatible Web page a breeze

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What you'll need

The key components for your video-phoning security-monitoring needs

Creative WebCam Live! Pro
£60
www.europe.creative.com
Though it might not look it, this is Creative's most recent Web cam release and it's a pretty handy performer. It's still built around a CMOS sensor with a maximum optical resolution of 640 x 480, but it utilises a USB2 connection to stream video at a higher frame-rate than its USB 1.1 peers.

In true Creative fashion, everything you need to get started is included in the bundle: there's a lapel-microphone for videophone conversations and a feature-packed control centre for camera settings that include face tracking and, motion detection and security monitoring.

Logitech InternetChat Headset
£30
www.logitech.co.uk
A headset microphone has a couple of major advantages over lapel and desktop mics. The first is that you can avoid feedback. Because your voice, and that of the person to whom you're talking, is played through the enclosed headphones, it doesn't creep into the mic and loop. The second is that the microphone is in the best position to pick up and record your voice, something that the person on the other end of the line will be most grateful for. However, by plugging in the headphones to your soundcard's line out, you're dependant upon a visual alert on your desktop if someone's trying to contact you and you're not wearing the headset.

Trust Wireless Camera NW-7500
£143
www.trust.co.uk
A more sophisticated alternative to a regular Web cam, the NW-7500 is a wireless network-ready security camera that can broadcast a feed to your PC wherever it's situated, as long as it's in range of your router. This means you've got far more flexibility as far as the location of your camera is concerned because you're not restricted by a USB cable. The camera does require power, though, so you'll still need to place it within reach of a plug socket. Thanks to the comprehensive software package you can tune into a live feed from the camera via an Internet browser anywhere in the world – as long as you leave your PC turned on, anyway.

Logitech VideoCall
Free for 30 days
www.logitech.co.uk/videocall
Although most instant messaging clients offer videophone facilities these days, they can be clunky (*MSN Messenger*) or just plain uncommon among your friends (everything else). So Logitech's VideoCall is a useful third option and is dedicated to the art of videophoning. Designed from the ground up as a broadband service, it effortlessly syncs the video with the audio, enabling you to avoid the appearance of a badly dubbed foreign film. You'll be asked to pay a membership fee after the first 30 days but you can get a taste of what's on offer for free and without having to enter your credit card details.

I spy with my little Web cam…

Whether it's for extra security or just Net-based communications, you can't go wrong with a Web cam

Setting up your Web cam for either videophone or security use is fairly straightforward. The only possible catch could come with your firewall, but the communications packages and firewall publishers are all pretty much up to speed on this and it's unlikely you'll have any difficulties.

If you do run into any problems, check the usual tech support sources for info on what ports you'll need to open to enable the Web cam software access to the outside world. The Web sites for each manufacturer offer a wealth of information and it's also worth checking out the Microsoft Knowledge Base, too, particularly articles 826283 and 324214, which cover real-time audio/visual communication issues with networking protocols and *MSN Messenger* firewall troubles, respectively. Then you'll just need to coerce your friends and family into investing in a Web cam themselves so you've got someone to talk to!

01 Your basic Web cam is a pretty easy creature to install, but there are a few tips worth imparting. Install the software from the installation CD before connecting the camera and load the drivers and attendant software, too: this adds the extra functionality.

02 Connect your Web cam to a free USB port on your PC. It'll need a clear connection to your PC so connect it directly to your PC rather than a hub, even if it is powered.

05 With the live feed from the Web cam turned on, turn the focus ring on the Web cam itself. You can widen the field of view to take in more of the room in which the camera is located for security or zoom into focus solely on yourself for videophone use.

06 If you want to use your camera as a videophone, connect your microphone. Check your soundcard ports and make sure that you connect the mic lead to the dedicated microphone input and not the line-in.

07 Open your soundcard's control panel and make sure that mic connection isn't muted. You'll need to configure the card, Windows and your videophone client to accept a clear input from the mic. Open the Windows Control Panel.

10 When using your Web cam for security purposes, you'll just need the software that came with your Web cam. You should think more about the positioning of the Web cam in this instance as sitting atop your monitor might not provide it the best view.
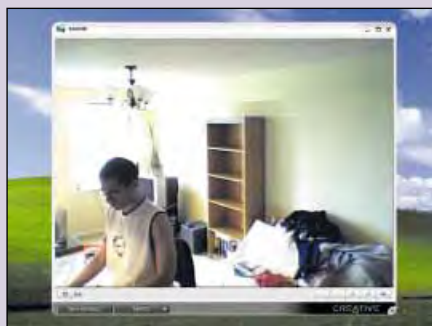
11 Using a USB extension lead, experiment with moving the Web cam further away from the PC, perhaps positioning it in a corner of the room. The lenses on modern Web cams are sufficiently good enough to record a viable picture from this range.

12 If you can, avoid having the camera facing a bright light source, such as a window; ideally, any light source should be behind the camera. This is where a dedicated camera like Trust's wireless model has the advantage – you can position it anywhere.

03 You can, however, use a USB extension cable and this is a useful resource to have as it enables you to position the camera further away from your PC. It can compromise image quality slightly, but for security purposes it's more than adequate.

04 Start up your Web cam's software and start configuring your camera. Most of the settings can be automated and this is best left as is, although if you're using the camera for security purposes, turn off the face tracking feature.
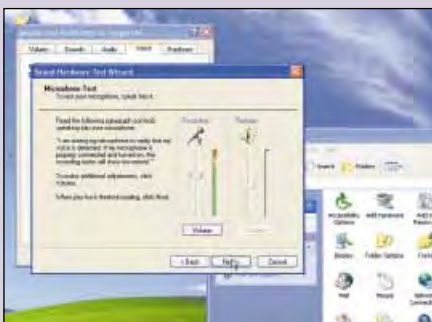
08 Open Sounds and Audio Devices, click the Voice tab and then the Test Hardware button at the bottom of the window. Position your microphone where you're going to use it – preferably away from your speakers – and follow the prompts.

09 Fire up your videophone client of choice – in this instance we're going with Logitech's *VideoCall*. Create an account and start talking. *VideoCall* works in the same manner as an IM client, so all you need to do is double-click a contact and get talking.

13 Unpack the camera and connect the Wi-Fi antenna and mains power supply. A mounting bracket is included that enables you to stand the camera on a flat surface or hang it from a wall or ceiling, so use it to position the camera in a corner of the ceiling.

14 If you're mounting it into the ceiling, try and screw it to a joist for a more secure fit, as the plasterboard on its own isn't terribly strong. Hammer cable clips into the wall to keep the power lead tidy and trail it down the inside of the corner of the two walls.

Taking it further

Add extra cameras and upgrade to improved lenses for better videophone and security performance

Given that you can achieve most of what we've covered here with a basic Web cam costing little more than £30 (though we've used a slightly more expensive model), there's a lot of room to upgrade and extend your videophone and security capacity. A better Web cam is always a good idea and there are many more on the market: investing in one with a proper CCD will reap benefits in terms of picture quality and fidelity. Not only will your videophone contacts enjoy a crisper image of you, but any security images you capture will also be of a more reliable quality.

Probably the biggest improvement for the security side of things would be to introduce more cameras, though. This would enable you to capture more angles of your room or expand your coverage into other areas of your home. You can do this simply by adding another Web cam to your PC, though you'll obviously be limited by the number of free USB ports that you have. If more cameras are what you're after, you'll need to look at a more specialised set-up. This could involve nothing more complicated than adding extra Trust wireless cameras to complement the one you already have. The software that Trust supplies can handle up to four cameras and their respective feeds, enabling you to quickly and easily expand the coverage of your home.

The InControl camera system is still limited by the hard-wired connection to your PC

Alternatively you could look at the InControl system that we featured back in issue 130. Although it's build to fit in as part of a home automation system, it's quite happy being used as a standalone security system and offers a similar functionality to the cameras featured here. What's more, the cameras in the InControl system features its own motion sensors, too, meaning that you could locate them around your home and still have them active only when triggered, which is an option not available with the Trust cameras. ∎

HOW TO UPGRADE YOUR…

Motherboard in just 30 minutes

It's the ultimate upgrade, capable of reviving the most worn-out PCs. Yet how do you install a new motherboard, exactly? **Mike Williams** has the details

Are you thinking of buying a new PC? A replacement motherboard, processor and graphics card could give you a similar performance boost for much less money. Furthermore, the upgrade isn't as difficult as you'd expect. After all, what's really involved? Unplug various cables and connectors, unscrew and remove one board. Then add the new board, and plug all your leads back in to the matching connectors. There are plenty of steps involved, but take them individually and they're not complicated at all.

The real work, in fact, lies in the preparation, and that starts when you're choosing the board. Are you using your old CPU, for instance? Then check it's supported. If you're buying a new processor then it's probably best to buy new RAM, too. Read the board small print to find out what type and speeds of memory it supports, and make sure that it delivers the performance your CPU needs.

Choose one of the latest high-end boards and it'll probably come with PCI Express. That means no more AGP slot, so you'll want a new PCI Express video card, as well. This can be avoided by opting for a solution with integrated graphics, but this isn't a great idea if you ever want to play games. Their 3D performance is rubbish!

All this hardware should perform well, but there's a price. Power consumption is likely to be much higher than your old system, and the new board may require extras, such as a 24-pin ATX power connector. In which case, purchase a shiny new power supply as well, with the connectors your board needs, and rated at least 300W (and ideally more).

Attention to detail

Once the hardware has arrived, you might be tempted to dive right into the upgrade, but that would be a mistake. There are other preparations you still need to make.

The new system may need to reinstall all your drivers, for instance. Find your Windows CD, and all the discs that came with your hardware (or download replacement drivers if you've lost them). In extreme cases you may need to reformat and reinstall everything, so take a complete backup of your hard drive before the upgrade, just in case.

Do some research into other problems you might encounter, too. Browse the motherboard manufacturer's Web site looking for support FAQs, and print out any interesting answers you find. Check the CD that came with your board for electronic-only documentation, again printing anything that looks interesting.

Collect together the tools you'll need, such as one crosshead, one small flathead screwdriver and some wire snips (or scissors will do). Then prepare some anti-static bags, or just anything non-conductive (ceramic plates are fine) to hold your various components. Use a few cups to collect together the different sets of screws, too, so they're not lost or mixed up.

A few labels might help remind you which cable goes where, while a sheet of paper or two will be handy for taking notes. Finally, clear yourself a sizeable working area, with everything within easy reach, and you're ready to begin. ■

→ FURTHER INFORMATION

How not to destroy your PC

Five deadly upgrade traps to avoid

To be honest, upgrading your motherboard isn't as difficult as you might expect, but there are some serious potential 'gotchas' along the way that could trash your system. Here are five paths to computer destruction that you really shouldn't follow.

01 You mistakenly leave one standoff in your case that doesn't match one of the mounting holes. Turn on the power, instant short circuit and your PC is dead. Oh dear. Check, check again, and then do more checking to make sure this doesn't happen

02 You're too cheap to buy an anti-static wrist strap, and in too much of a hurry to ground yourself frequently. The end result is that static discharge trashes your chipset, CPU or RAM. Don't rush, as any accidents here could be very, very expensive.

03 You've applied pressure to your CPU during installation and bent its pins. Bad move. Why do you think these are called 'zero insertion force' sockets? Read the processor installation instructions carefully before starting, especially if you've not installed a CPU before.

04 Snapping a CPU heatsink into place can be difficult, too. So why not use a screwdriver to apply more force? Because if it slips you'll crack the board, that's why. If you use tools then be careful – at least avoid ones with sharp ends that will cause even more damage

05 You've bought a new power supply. Unfortunately, it was set to 110V instead of 220V, you didn't notice, and the whole thing went bang when you turned on the power. Check the setting if you don't want to become very familiar with the smell of burning.

→ STEP-BY-STEP GUIDE

Motherboard manoeuvres

It's out with the old and in with the new – you'll soon notice the improvement

01 Unplug the power, open your case, start unplugging cables from the motherboard and then remove any expansion cards. If you're not using the old CPU or RAM then you can leave them installed if you're sure they won't be knocked on removal. Undo each of the mounting screws (there are usually about nine), and lift out the old board.

02 Check the standoffs used to hold the previous motherboard, line up with the mounting holes in your new board (hold it up to the light to be sure). You must relocate any that don't match up, otherwise the metal contact could ground the board and trash its components. (Use nylon spacers cut to size for extra support if you need it.)

03 Your new motherboard probably has different rear panel ports to the old one, so you'll need to switch the I/O shield. Occasionally, these are held in place by screws, but usually you must push the old one out and snap the new one into place. Use the minimum force to avoid bending the case or shield, and be patient – this can take a while.

04 You could plug in your CPU, heatsink and RAM once the board is installed, but there'll probably be much more room to work if you do it now. Add your CPU and heatsink as we discussed in the last issue, then add your memory. It's common to have strict rules about which DIMMs go where, so read the manual if you're not sure.

05 New motherboards (and CPUs) tend to use more power, and if your board also requires a 24-pin ATX connector (or you'd like extras like SATA ports) then a new power supply is a must. They're cheap, though, and usually easy to switch: just unscrew and remove the old one, replace it with the new supply, then screw it into place.

06 Gently slide the new board into position, checking that the ports show through the I/O shield. (If they don't, check the shield again). Line up the mounting holes with the standoffs, and put the screws back into each one. Don't tighten any until they're all in place, and don't make them too tight at all or you may warp the board.

07 Your case switches, speaker and LEDs (power, hard drive) all connect to a set of tiny pin headers. They're usually colour-coded, and behind the farthest expansion slot from the CPU, but check the manual to locate them. The LED connectors are 'polarised', they only work one way round, so flip them 180 degrees if an LED doesn't come on.

08 Now reconnect the leads to each of your drives. Don't mix them up, for example swapping the master and slave positions on an ATA cable, or your system might hang during boot. We don't want the system to fry, so plug in all your system fans and then the other power connectors, then finish by reinstalling any expansion cards.

09 Check your power supply is set to the right voltage, if it has a switch, then insert your keyboard, mouse, monitor and system power cable. Tip the PC gently to check for loose screws, then turn it on. A single beep usually means all is well, but start the BIOS setup program anyway and check all your hardware is recognised correctly.

Image supplied courtesy of: ITC Publishing, Ukraine

DON'T TRY THIS AT HOME!

It's bin modded

The 'circular file' inspired this Russian mod. **Graham Barlow** checks out the trash

Old PCs never die, they're just recycled into new ones. This little adage has been the inspiration behind many great PC mods, just like this RYC (Recycle Your Computer) PC created by Alexey Christov and Daniil Khovratovich, two Russian students at university in Moscow. It's a PC created inside an Ikea wastebasket. Yes, that's right, there are Ikea stores everywhere. We tracked Alexey down among the sub-zero temperatures of Moscow to ask him a few questions about how they created it.

Clearly, the big challenge with this project was to physically fit the entire PC inside the basket.

'The main problem of this project was the space – or rather the absence of space in the bin,' says Alexey. 'So we had to use specific hardware and consider carefully how to fit the kit.'

Rubbish PC

The idea of the 'PC in a trashcan' is not a new one – Alexey and Daniil simply tried to do it with top-quality components and a bit of design flair. To be accurate, the RYC PC is incorrectly named, since it doesn't have any recycled parts at all.

The lack of space meant that the only type of motherboard suitable was a mini-ITX. 'We didn't want to use VIA Epia because of relatively poor performance and limited expandability,' explains Alexey. 'We choose an Insight P4-ITX mobo because it's compact, with good expansion potential. This enabled us

Out of the bin and naked, this PC's intricate innards are on full view, making us marvel at how it all fits into such a small and potentially awkward space

to fit a fast P4 CPU (up to 3.06GHz) and a Radeon 9200 in the spare PCI slot, because an integrated video interface wasn't convenient for us.'

The PC was constructed on four separate levels, separated by plexiglass bases, and held together by long screws. The hard part was adjusting the levels to fit all the hardware they had to cram inside. 'The first attempt was not very successful, so we had to take it apart and try again,' recalls Alexey.

It's an ingenious design that means you can pull the entire PC out of the case in one go, without leaving any parts of it behind – if all the cables are unplugged, of course. The lower layer contains the PSU. On the next level is the motherboard. On level three there's the PCI video card and the fourth and final level contains the CD-ROM drive, hard drive and VFD (Vacuum Fluorescent Display) unit.

The second part of constructing the PC involved cutting out sections of the waste bin to enable access to the CD-ROM drive, power supply, monitor, network and USB ports. 'Creating windows in the bin wasn't particularly difficult – cutting pliers do their job quickly and accurately,' explains Alexey. 'However, this raised the question of what to do with the resulting metal edges.'

The first idea they had was to put molding on them, but that didn't look very inspirational. The solution they eventually went for was to make a sort of sandwich out of soft plastic to cover the sharp edges, which gave the PC a professional-looking finish.

Trashed

Reactions to the PC have been varied. They range from 'Oh great, another trashcan – it belongs with the rest of the rubbish,' to 'Wow, this is one of the best projects I've ever seen!' However, Alexey remains quite philosophical about it all. 'All people have different points of view so I think that such reactions are normal. I'm very glad that this project won the "Best case in CIS (ex-USSR) 2004" and it proves that most people like it.'

Coming first in a mod contest with your PC is validation, but the most important thing is what Alexey and Daniil think. 'I'm proud of the whole PC itself – I mean, I can't say which part is my favourite, because all of these parts make a whole.' ■

Here's what the windows looked like before and after they were fitted with soft red plastic to cover the sharp edges

→ **WHO ARE YOU?**

UP CLOSE & PERSONAL

NAME: Alexey Christov
OCCUPATION: I'm 18 years old and I'm a student of the second grade of Moscow Aircraft University.
AMBITION: My main ambition is to graduate from my university.
SYSTEM SPECS: P4, Insight P4-ITX mobo, Radeon 9200 PCI graphics card, Vacuum Fluorescent Display (VFD), rheobus unit, 80GB hard drive.
ON THE WEB: Find out more about the construction of the RYC (Recycle Your Computer') Project at **www.promodz.ru/content/view/77/26/1/0/**.

THE PAIN-FREE WAY TO REINSTALL WINDOWS

Give your PC a clean slate by returning Windows to its factory settings. **Joe Cassels** is your glazier...

There are many reasons why you may need to reinstall Windows. You may be upgrading from an older version of Windows. You might have changed some of your hardware or had to replace a device due to hardware failure. In this case it's often advisable to reinstall the OS to ensure stability. Many people choose to reinstall Windows to make their PC more stable as it accrues a multitude of minor niggles over time.

There may be times, though, when more critical events necessitate that you give your OS a clean start. Your hard drive might become physically damaged. A virus could wreak havoc throughout your system in such a way that even your AV software is unable to undo the damage. A mistake using partitioning software or other programs that access your hard drive at a low level could render it impossible to boot into Windows. In cases such as these, you could be rescued by a system backup that was taken in one of your more foresighted moments, but if you have no such thing, you're going to have to reinstall Windows.

Whatever the reason, reinstalling the OS can seem a daunting task. Because you'll be wiping your hard drive clean and starting from scratch, the danger of losing data is real. However, if you plan your reinstall carefully and take simple precautions, you won't go wrong.

This feature contains essential advice for reinstalling all versions of

ON THE CD

Windows, with the emphasis on Windows XP. We'll take you through the process of backing up your data to make it safe and advise on partitioning your hard drive to minimise the chances of future data loss. We'll also offer tips on automating the process to make reinstalling Windows as quick and

easy as possible. We'll explain how to roll SP2 into your installation disc so that you won't need to add it after configuring Windows. There'll be pointers on the essential post-install tasks necessary to ensure your PC's security and stability. A few minutes

spent reading this feature before your next reinstallation will save you hassle and heartache later on.

Inside this article...

Back up and prepare
Don't go down the reinstallation route half-cocked – ensure that you've got your data, drivers, settings and email safe and sound. We focus on preserving your messages in *Outlook* and *Outlook Express*, along with getting extra help for

reinstalling Windows 98.

Automatic installation
Sit back and think of... well, wherever you like, as Windows XP installs itself without you having to lift a finger.

Slipstream, partition and format
Service Pack 2 is such a hefty file, so why not combine it with the original XP installation file, for future occasions? Then while you're at it, split your drive for greater efficiency.

Reinstalling Windows
Answer all of XP's questions, then activate and configure the OS.

Post-install tasks
What to do afterwards...

Back up and prepare

Make sure that your installation goes smoothly and that you don't lose important data

The success or failure of reinstalling Windows XP depends on the preparation you put in. If you've backed up your settings and ensured you know where all your driver discs are, you'll avoid headaches later on. There are several other tricks to employ to ensure that you lose none of your data. Ensure that you either have your ISP's installation disc or you have a note of the telephone number and your account details, because getting online will be a priority once you've reinstalled. It's easy to overlook the importance of your email messages, so make sure you back these up, too.

The easiest way to back up *Outlook Express* is by using a third-party software. *Outlook Express Backup Wizard* is available on a free 30-day trial from **www.outlook-express-backup.com**. Should you want to use the program for longer, the charge is $40 (around £21). The walkthrough below explains how to back up the contents of *Outlook*.

If you don't fancy spending money on backing up *Outlook Express*

The Files and Settings Transfer Wizard can copy over settings to and from a Windows XP PC

email there is another way. First make hidden files visible by Choosing Start -> My Computer -> Tools -> Folder Options -> View -> Show hidden files and folders. Now click OK and browse to C:\Documents and Settings\ [username]\Application Data\ Identities\[security identifier]. [username] is your Windows XP account name and [security identifier] is a string of numbers and letters in curly brackets. Copy the Inbox file to a different location.

A full backup of your Windows drive or partition is always a good idea. Use a drive-imaging program like

If you know where to look you can back up your Outlook Express *Inbox directly*

Norton Ghost for an exact copy of things as they are. If you have multiple hard drives or partitions, you'll find that taking an image of your drive shouldn't take much longer than half an hour or so. A backup to CD or DVD is handy although it may take a little longer.

No Windows disc?

In some cases, a full reinstallation isn't possible because you don't have the Windows CD. Many mass-produced PCs don't come with an installation CD containing a full copy of Windows. The hard drives on identical PCs are simply cloned. They

→ **STEP-BY-STEP GUIDE**

Back up Outlook

Safeguard your email, contacts, events and tasks by exporting them from Outlook
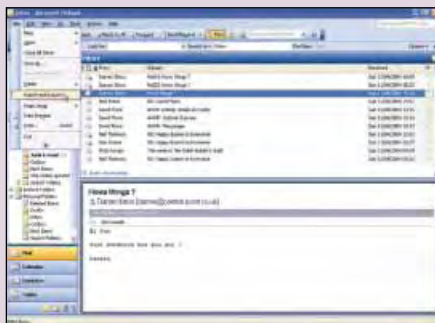
01 Backing up *Outlook* email is easy because the Import and Export Wizard takes care of it all. Select File -> Import and Export to start the wizard. Now choose Export to a file and banish Clippy if he pops up.
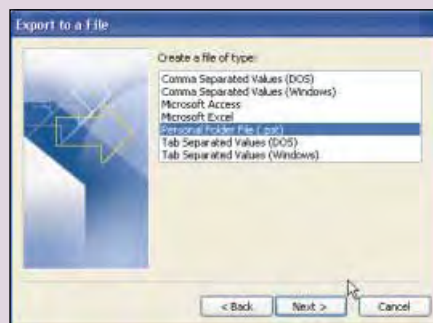
02 You can export the data in a range of formats, but the best one for restoring to *Outlook* at a later date is a Personal Folder File (.PST). Select this and click Next to continue.
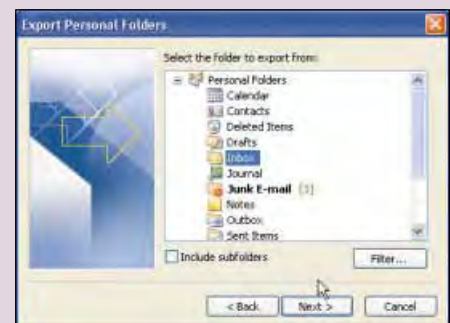
03 Select the folder that you want to export from. In this case it's the Inbox, but you could back up all your folders by choosing Personal Folders and checking Include Subfolders. Provide a filename and location and apply encryption if others may have access to the file.

include a partition that contains an image of the C drive, from which you can restore your version of Windows. In some respects this is easier than reinstalling from scratch, because you don't have to track down all your drivers. However, not having a Windows CD does have its disadvantages, especially if you don't have all the Windows components installed, because you can't add new ones without a Windows CD.

Once you wipe your C drive there's no going back, so it's worth double-checking that you have everything you need backed up elsewhere. Backing up your documents should be no more complicated than burning a copy of the contents of your My Documents folder to CD. However, consider moving My Documents to a different drive or partition to your Windows drive. Select Start and then right-click My Documents, choosing Properties. Press Move and browse to the new drive. Sitting away from the Windows drive, your documents will survive a format and reinstall, although it would be a good idea to have a separate backup, just in case.

Don't forget your *Internet Explorer* Favourites. To back them up, choose
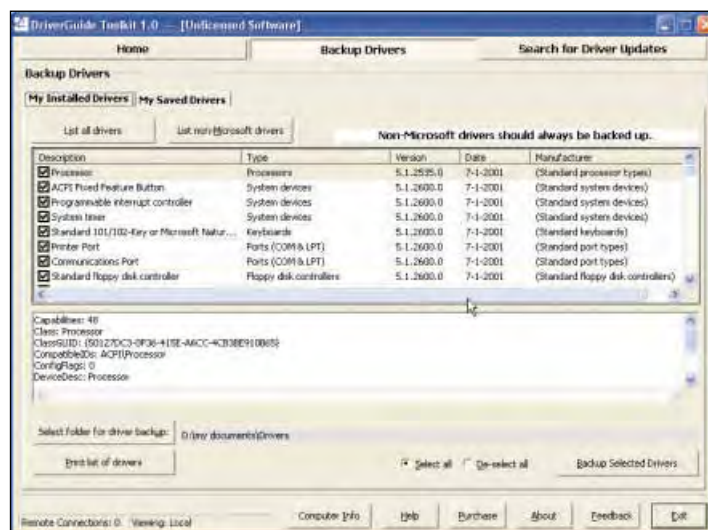
The Driver Guide Toolkit backs up all your existing drivers to a safe place

File -> Import and Export, click Next and select Export Favourites. Select your main Favourites folder and provide a backup location. Click Next -> Finish. Keen gamers will want to make sure their saved games files survive a reinstall or clean-up session. The best way to accomplish this is to move your saved game files into My Documents before backing that folder up.

Drivers are just as important to preserve. Tracking down the right driver for an obscure piece of

equipment can be tedious, so make a backup. Install *Driver Guide Toolkit* (**www.driverguidetoolkit.com**). It's a free trial of very short duration, but it doesn't take long to back up your drivers. Launch the program and select Backup Drivers -> List all drivers. Now choose Select folder for driver backup. Browse or create the folder.

Choose Select all and click 'Backup selected drivers'. Exit the program and burn the contents of your folder to a CD for safekeeping.

# Automatic installation

Look no hands! Instruct Windows XP to install without user intervention

By creating a special answers file, you can make Windows XP install without bothering you for information, such as the time zone and networking components. This technique won't work with upgrade discs as they have to verify that you own a copy of the earlier version of Windows.

Download the Windows XP Service Pack 2 Deployment Tools from **www.microsoft. com/downloads/details. aspx?FamilyId=3E90DC91- AC56-4665-949B-BEDA3080E0 F6&displaylang=en**. Open the Downloaded CAB file and extract these two files to your desktop: ref.chm and setupmgr. exe. Double-click setupmgr.exe to launch the wizard. Choose

Create New, followed by Unattended setup. You may need to choose your version of Windows XP as Professional edition is the default setting.

Opt for a Fully automated installation and click Next. In the Distribution Share screen, choose 'Set up from a CD' and accept the licence agreement. Now work your way through the installation questions as if you were installing Windows XP. Review your choices and click Finish. Save the resulting file to the desktop and call it Winnt. Exit Setup Manager.

You now have two files: Winnt.sif and winnt.bat on the desktop. Open winnt.sif in Notepad and scroll down to the
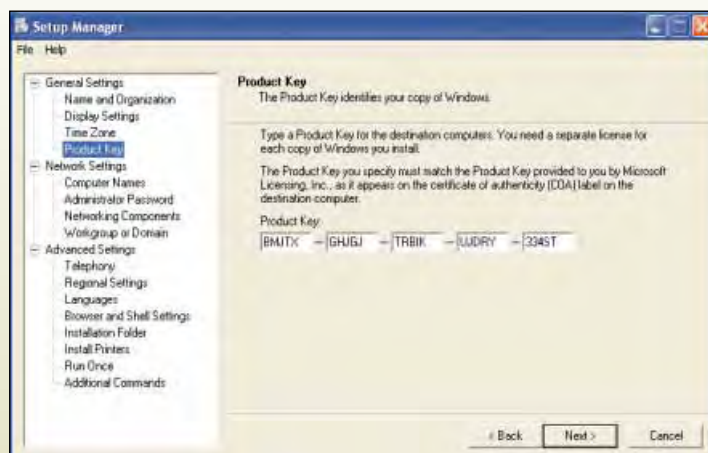
Setup Manager enables you to create an answer file so you can automate installing Windows XP

section marked [data]. Change the value of Autopartition from 1 to 0, so it reads Autopartition=0 and resave the

file. You can now incorporate these files into a new Windows XP CD. The sif file should now be detected

→ AT A GLANCE

Introduction to Outlook Express Backup Wizard

Use this back-up program to back up your OE email

BACKUP WIZARD
Once installed, **Outlook Express Backup Wizard** *can be launched from the Start menu. Work through it just like any other wizard.*

ITEMS
The important box to tick here is Email/News messages. These are what you will want to archive. Other items here belong in a backup.

IDENTITIES
Outlook Express *can handle multiple identities within the same Windows account. If there's more than one set up, select the one you want to back up here.*
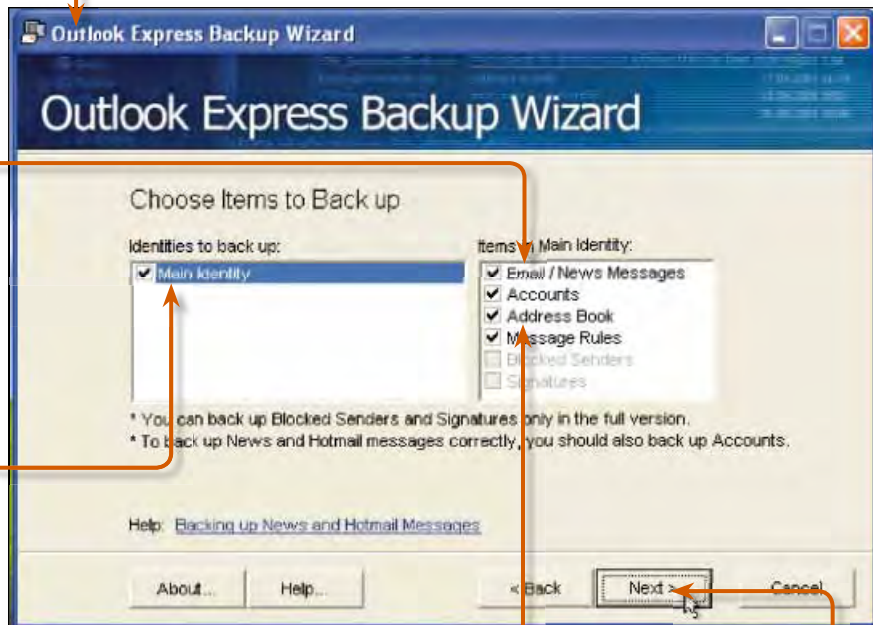
BACK-UP ITEMS
Here you can optionally back up your account configuration, address book, rules, blocked senders and signatures.

SAVE ARCHIVE
Click Next here to move on and specify the file name and location for your archive. You may want to subsequently burn this file to CD.

→ FURTHER INFORMATION

DON'T OVERLOOK BATCH 98

If you're backing up and reinstalling Windows 98, this tool could be a great help

To use *Batch 98*, you need to install the Resource Kit Sampler, which you can find by browsing to tools\reskit\setup on your Windows 98 CD. Run the setup program to install the tools. Once installed, you'll find it under the Deployment Tools in the Tools Management Console.

The program collects settings information and saves it to a batch file, which you then run alongside the installation. Click the top button to collect settings, and then choose each

button in turn to gather additional information about your computer. In the General Setup Options, you can enter your product key code, so that you'll never have to enter that again during installation. Once you've chosen all your preferred options, click the Save Settings to INF button. Browse to your Windows Setup folder and save the INF file there. It helps to copy the Windows 98 setup files from the CD to your hard drive, too.

When you come to install, using *Batch 98*, you'll need to

start your computer using a Windows startup disk. Then change your data partition's drive letter, in most cases D by typing D: or similar. Change directory to the Windows setup folder, using cd\window~1, as DOS will truncate your directory name.

If this doesn't work use DIR to see a list of your directories. Once in your Windows Setup directory type setup.exe msbatch.inf. This will start the installation, using the batch file.

Use **Batch 98** *to gather your Windows 98 settings to automate the installation*

Slipstream, partition and format

Incorporate Service Pack 2 and prepare your hard drive to receive a new copy

SP2 can take a long time to apply after you've installed Windows XP, so why not make a new Windows CD with the service pack included? Some newer Windows CDs already come with the service pack. If yours is around a year old or more, you'll need to slipstream the service pack in yourself and for this you'll need a copy of the full network edition of SP2. You can obtain this from **www.microsoft.com/ downloads/details.aspx?FamilyId =049C9DBE-3B8E-4F30-8245-9E368D 3CDB5A&displaylang=en** and your

Windows XP CD. You can't slipstream service packs into Windows 9x CDs.

First, you'll need to extract the files from your existing Windows disc. With them on your hard drive you now need to place the full network installation fil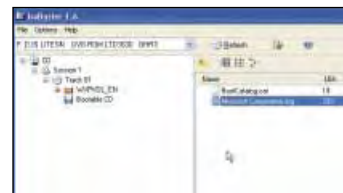e for SP2 into an easily found location. Choosing a simple location will prevent errors due to entering the file locations inaccurately. A command line utility merges the SP2 files with those of the Windows XP setup disc. You can then burn the resultant hybrid files to CD. Providing that you use the right options in your CD burning

Use ISO Buster to extract the MS Corporation. img file from your Windows XP CD

application, you should make the new Windows XP CD bootable.

ISO Buster

To copy your Windows XP CD, you'll need to use a program called *ISO Buster (***www.smart-projects.net/ isobuster***)*. This enables you to extract the files from your CD directly to a folder on your hard drive. Install it and insert your Windows XP CD into your CD drive. When it auto starts, opt to exit the Welcome screen.

Now open your C drive, right-click and choose New -> Folder. Call it winxpcd. Choose Start -> All Programs -> Smart Projects -> ISO Buster -> ISO Buster. Select your Windows CD in your CD drive. Expand the file tree until you can see the ISO image, which should be called WXPVOL_EN. Select it and then select all the files in the right-hand pane. Right-click your selected files, choose Extract Objects and browse to the winxpcd folder. Click OK and wait as the CD files are extracted and saved to your hard drive.

Once *ISO Buster* has extracted your CD files, you'll also need to direct it to recover the boot CD image file. Open the disc in *ISO Buster* and select Bootable CD. Now double-click Microsoft Corporation.img in the right-hand pane and opt to extract it to the root of your C drive, C:\. Without the Microsoft Corporation. img file you won't manage to recreate a fully bootable Windows CD.

Combine files

To combine the service pack files with those of your Windows CD, you need

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→ AT A GLANCE

Partition your drive

Use the Windows XP setup program to partition your hard drive. Bear in mind that this destroys all your data...

FORMAT
Press [Return] to commence formatting and installing Windows XP on to the selected partition.

C DRIVE
This system has a single partition on a single hard drive. If there was more than one partition or drive you could move between them using the up/down arrows.

FAT32
This partition used to carry Windows 98 and used the FAT32 file system.

**DELETE PARTITION**
We want to remove this partition, so press [D] to delete it.

CREATE PARTITION
Having deleted the old partition, press [C] to create a new one or two in its place. Two partitions will keep Windows XP and data separate.

AVAILABLE SPACE
This shows how much space there is available in this partition. There's enough here to create a couple of partitions in the same space.
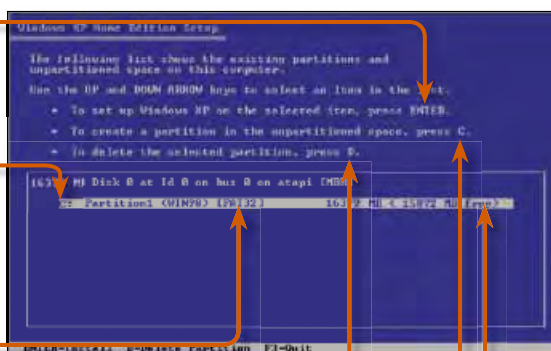
to use a command line instruction which takes the form [filepath and name of service pack file] -s:[location of Windows XP CD folder]. Hence, if you put the SP2 network installation file in the root of your C drive, rename it sp2.exe and place the Windows XP CD files in a folder at C:\winxpcd, the command should read c:\sp2.exe -s:c:\winxpcd.

Putting the relevant files close to or in the root of your C drive reduces the complexity of the command that you have to type. You can always move or delete the files once you've successfully written your new Windows CD.

Burn a new CD

To burn the bootable CD using *Nero*, launch the program and choose

CD-ROM (Boot). On the Boot tab, select Image File and click Browse. Choose All Files and find the Microsoft Corporation.img file that you extracted using *ISO Buster*. Check Enable expert settings. For expert settings, choose no emulation, 07C0 for load segment, and 4 for number of loaded sectors.

Move to the ISO tab and under File name length choose (Max of 31 characters) ISO Level 2. On the Label tab, provide a label for the disc. Move to the Burn tab. Check Write and Finalize CD (No further writing possible!). Click New to create the new ISO. Now browse to the C:\winxpcd folder and drag its entire contents into the left hand panes. Click the burn button on the toolbar followed by Burn to write the disc.

Partitioning

Formatting and partitioning your hard drive is an important step. Making a partition for Windows and a second for data is a simple change, but it means that your data will survive future reinstallations without you having to back it all up first. Partitioning itself is a destructive process unless you invest in a non-destructive tool, such as *Partition Magic*. However, you can carry out destructive partitioning using *FDisk* for Windows 9x or the Windows XP setup utility.

Start installation

To start the installation, you need to boot from your Windows XP CD. You may need to enable CD booting in the BIOS to achieve this. The set-up

program interrogates your hard disk(s) and reports the current partitions. You can create or delete partitions here, but eventually you need to choose the one you want to house Windows XP and press [Return].

You're now presented with a number of format options. The best option for stability and performance is 'Format the partition using the NTFS file system'. Setup describes the partition you chose to format. Press [F] to continue. Your drive will be wiped and you'll start the installation of Windows XP. All installation files are now copied from the CD to the drive. This takes some time, but the end result will be that later parts of the installation go more quickly. When it's complete, reboot your PC.

→ **STEP-BY-STEP GUIDE**

Early installation

Start reinstalling Windows XP by booting from your CD
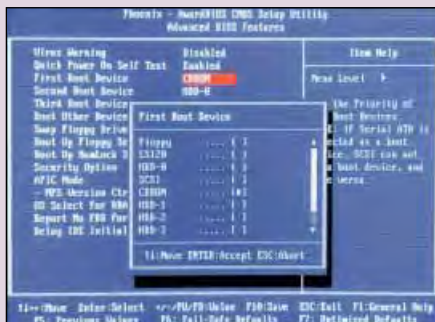
01 Enter the BIOS and search for the boot options. Modify your boot sequence so that your CD-ROM drive is the first or second boot device. It must take a higher position than your hard drive. Then save your changes and exit.
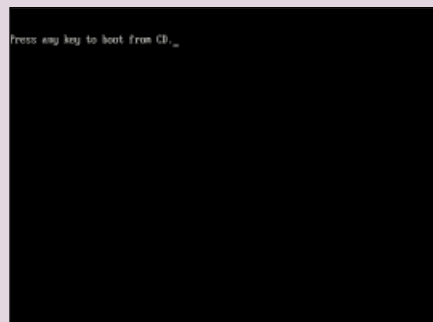
02 Place your Windows XP CD into your drive before restarting your computer. If booting from CD is enabled in the BIOS, you'll be prompted to press any key to boot from the CD. You only have a few seconds to do this, so be quick.
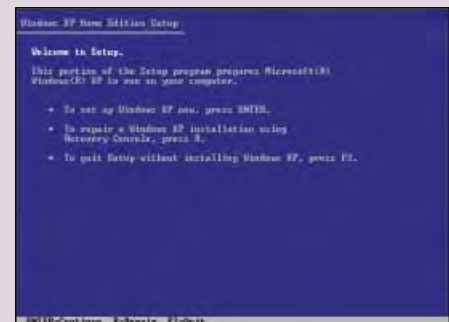
03 Once the initial CD files have loaded, you see the Welcome screen. Choose to set up Windows XP now by pressing [Return] if you want to progress to wiping your hard drive. Otherwise choose [R] to repair Windows or [F3] to exit.
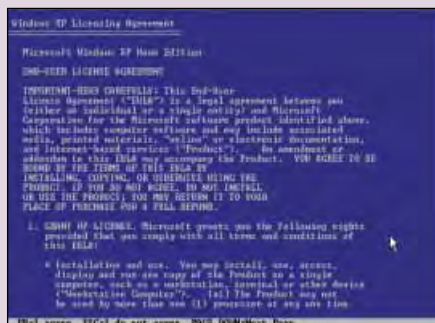
04 Having confirmed that you want to start installing Windows XP, you'll see the full text of the End User License. Read through it and press [F8] to show that you acceptance its terms.

05 If you have multiple hard drives or partitions, choose which one to install Windows XP on. If you only have one drive and partition you won't see this step. Once you've chosen, press [F] to format the drive. This wipes all data on that drive.
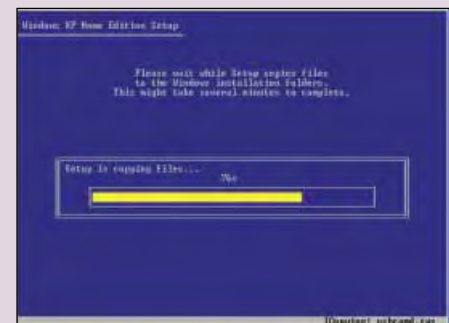
06 Once your hard drive has been formatted, all installation files are copied from the CD to the drive. This takes some time, but it means that later parts of the installation go more quickly. When it's complete, reboot your PC.

Reinstalling Windows

Once your PC reboots for the first time, you need to provide answers to the installation questions

Whichever version of Windows you're installing, you'll be asked for similar information during its progress. Windows is used all over the world and it contains language settings alongside the time zone and the keyboard type you use. These vary slightly between, say, US and UK settings, but somewhat more for different languages and character sets.

For example, if you're getting an 'at' sign instead of quotation marks, you're using a UK keyboard that's running US settings or vice versa. The default settings are the US ones, but you can easily change them during this portion of setup. Selecting the correct time zone ensures that your PC can manage local daylight saving time.

When you've confirmed regional settings, you'll need to provide your name and company. The latter field you can leave empty if this is a home PC. You can use typical network settings in practically all circumstances unless you're an industry professional or power user, in which case you'll know what you're doing. Using typical settings your PC can still log on to a domain or join a workgroup, which is the most common setup for home networks. If this is your only computer, having the network settings in place won't affect its function. If you plan to set up a simple home network later the default settings will suffice.

YOU MUST ENTER THE PRODUCT KEY CAREFULLY, AS IT UNIQUELY IDENTIFIES YOUR COPY OF WINDOWS

The Windows 9x Setup asks similar questions to the Windows XP one

During your installation, you'll be asked for the product key. This is the code that you'll find on the back of your Windows XP folder or on the CD case if you're installing an older version of Windows. Enter this carefully as it uniquely identifies your copy of Windows. The product key forms part of the Windows XP product activation code, along with information generated from parts of your computer hardware. See the boxout to find out more about product activation. If your installation is an upgrade version of Windows, you'll need to prove that you own the earlier version of Windows that you're upgrading from. You may be prompted to insert a CD or browse to installation files of the earlier version.

Stay in command

During the last stages of installation for Windows XP, you'll be asked for an administrator password. This protects the main PC settings. If you share your PC, you may want to keep this secure if you don't want other people altering key system settings. You don't need to provide an administrator

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→ FURTHER INFORMATION

PRODUCT ACTIVATION

Windows XP needs to be activated after reinstallation, unlike older OS versions

Product Activation is a step taken by Microsoft to prevent casual copying; the practice whereby Windows CDs are shared by friends or family. This undercuts Microsoft's profits and forces the price of its software upwards.

Activation is quick and easy. It involves your PC making a quick connection to Microsoft. It simply creates a code that identifies your hardware and links your product key to it. If your machine is not online, or your modem isn't working properly, it may mean a brief free phone call to Microsoft. Have your product key on hand and be ready to provide it to the automated system.

Product activation is mandatory and you have to complete it within 30 days of installation. Windows XP won't let you forget this. You can choose to postpone activation if you wish, but it's probably best to get it over and done with, as Windows XP will nag you endlessly until you do so. If you go over the 30-day limit, Windows XP won't work anymore. Don't worry about multiple Product Activation if you're reinstalling Windows XP on the same computer. If you have previously activated Windows XP on this computer the activation process will confirm that you are using the same copy of Windows XP with the same hardware.

Find out more about product activation at www.microsoft.com/windowsxp/ evaluation/features/activation.mspx

If you didn't boot from CD, you may be offered the license agreement before you enter your product key

Once complete you're invited on a tour of Windows XP. As if you don't know it well enough already...

account for versions of Windows in the 9x family.

If the worst happens and your installation fails, Windows creates text files that log the installation. Assuming that you're able to access the hard drive, using DOS or another version of Windows, check through the Windows directory for Setuplog. txt and Setupapi.log. You can open these using any text editor such as like notepad. You may need to save the files to a floppy disk and take them to another PC to view them. Look for components that didn't install correctly. These will give you a clue as to where the installation failed and how you can ensure that it doesn't happen next time you try.

Get yourself to a PC that's got a working Net connection and go to **http://support.microsoft.com**. Browse the Microsoft knowledge base for the version of Windows that you're installing and enter any error message you found into the search bar. If you don't have an error message, try to summarise the problem first.

Use the Microsoft Knowledge Base to help troubleshoot any installation problems

→ STEP-BY-STEP GUIDE

Completing installation

Finish off the installation of Windows by providing the necessary configuration information

01 Once the hard drive is formatted and the installation files are copied from the CD to the hard drive, your PC restarts. You see the familiar Windows XP splash screen before the installation proper takes place. This may take some time.

02 The installation files are extracted and placed into the correct locations for Windows XP to function correctly. You'll see a progress indicator and an estimation of the time left until the installation completes.

03 Part way through the installation you'll be asked to confirm the regional settings. Click Customize and set the location to the correct country and time setting. Then click Details to select the language and keyboard settings.
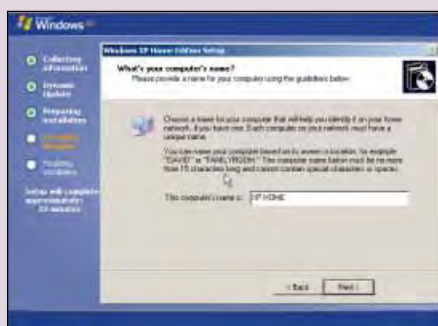
04 Once you've entered your product key, you'll be asked for a name for your PC. This will identify it on your home network, if you have one. The name can be up to 15 characters long. Consider using your name or that of the room the PC is in.

05 Enter your name and, optionally, that of your company. This will appear on your software declaring that it's licensed for your use. It appears in the System Properties dialog, which is quite a cool way of stamping your ownership on your computer.

06 Finally, you're asked to provide network details. Accept the default of Typical settings and click Next. Unless you're on a corporate network, you don't need to provide domain information.

Post-install tasks

Now that the basic OS is back on your PC, what's next?

You need to reinstall any device drivers that Windows didn't pick up itself. As a rule of thumb, Windows XP is better at finding drivers than Windows 9x, although it's always a good idea to have your existing drivers backed up in an accessible place. As long as you used *Driver Guide Toolkit* to back them

up, you should be able to point the hardware wizard to the folder that you backed all these up to. However, you may still need to go online to pick up one or two of them.

Getting online is therefore a priority as missing drivers and your Windows updates can be picked up from the Web. Without Internet access you won't be able to set up most maintenance tasks. Choose Start -> All Programs -> Accessories -> Communications -> New Connection Wizard and enter your ISP details. If you have a CD from your ISP, this may be able to set this up for you, although you'll almost certainly have to put up with branding in *Internet Explorer* and *Outlook Express*.

Acquire your updates

Once online, you can pick up and Windows Updates that you need. In Windows 9x, launch *Internet Explorer* and choose Tools -> Windows Update. Make sure that you install all Critical Updates and Service Packs. If you're updating Windows XP, you can use *AutoPatcher* (**www.autopatcher.com**).

This simplifies the process significantly, but it's only really an option for you if you have broadband.

When your drivers and updates are in place, you can reinstall your software. Start by ensuring that your anti-virus and firewall programs are in place quickly; other programs can follow. Update these as soon as they are installed. Follow this with *Ad-Aware SE*, *Spybot* or *Microsoft AntiSpyware* to make sure that your system stays free of malware. Finally, restore your data or point My Documents to its new location. Somewhere on a separate drive to Windows is ideal. Right-click My Documents on the Start Menu and choose Properties. Click Move and browse to the new location.

Now you can reinstall your remaining programs, including your office suite. Restore your backed-up email using the *Outlook Express Backup Wizard* or *Outlook's* Import feature. You'll also need to enter your email account details as these won't have survived the reinstall. You now have a version of Windows that should be a lot more responsive. ■
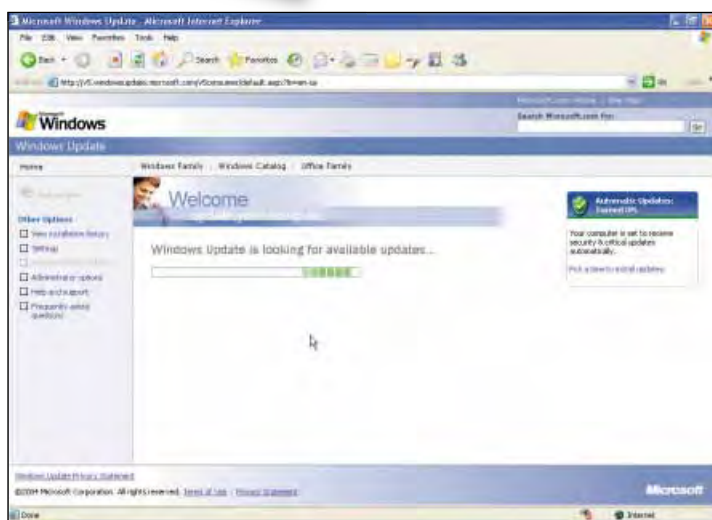
Use Windows Update to pick up all Critical Updates and Service packs since your reinstall

---

→ STEP-BY-STEP GUIDE

Get ahead with AutoPatcher

Make applying Windows Updates quicker and easier with this utility

01 Install *AutoPatcher* and browse to its executable file. Each time you launch it, you need to agree to its license. It then scans your system and identifies what's installed and what isn't.

02 All available updates and system tweaks are presented to you in a list. Select one and click Module Details to find out more. Check each of the boxes next to components that you want to install. Click Update.

03 *AutoPatcher* now updates your system. Depending on how many updates you've selected and how big each of them is, the rest of the process may take a few minutes or an hour or two. The speed of your connection will also affect this time. Click Finish when you're done.

Tested......

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P117

19-inch TFT LCD MONITORS

Now that the CRT monitor has all but been consigned to history, larger TFTs are becoming affordable. This month we take an in-depth look at eight 19-inch monitors that just sparkle

STARTS ON PAGE 86

'On the diagonal, a 19-inch LCD is equivalent to a 21-inch conventional CRT screen, and is very much the new big thing'

HOW WE RATE OUR REVIEWS

Translating the percentage score into real-world terms

←50%	Seriously flawed. Something to avoid
50-59%	Neither exceptional, nor terrible. Average, in other words!
60-79%	A good product with a couple of limitations
80-89%	An item worthy of your cash
→90%	An exceptional product in every way

→ **SECTION CONTENTS**

COOL GADGETS
Summer's here, so chill with these top tech gizmos **P84**

USB MASSAGE BALL £10
www.hela.co.uk

Long hours spent working at a PC can often result in sore backs and joints. Yet rather than soothing your troubles away with a long soak in a hot bath at the end of the day, deal with your discomfort at your desk – and in full view of your co-workers. The USB-powered Massage Ball vibrates at a rapid rate of knots, and in conjunction with the rubberised textured surface enables you to target your aches and pains. In tests, the Ball seemed to work well enough, although it could be argued that the embarrassment of using the device in public will take your mind off your knotted muscles...

COOL GADGETS

Want extras for your laptop or PC? Cliff Hope suggests you consider some of this flashy gear

M:ROBE MR-100 £160
www.m-robe.co.uk

In the crowded MP3 player market it takes something special for one to stand out from the crowd. With this in mind, the Olympus MR-100 should come supplied a pair of stilts, such are its drop-dead gorgeous looks. The touch-sensitive control pad is precise and responsive, and the menu system is designed with simplicity in mind. Crucially, music quality is very good. The 5GB drive means that you'll fit plenty of WMA/MP3 files on it and there's a commendable 12-hour battery life. The surface is a magnet for fingerprints, mind, so bring a yellow duster and a can of Pledge.

BELKIN NE-07 NOTEBOOK BAG £30
www.belkin.co.uk

Laptops are undeniably useful, but unless you own a super-toughened version you'll know that they're fragile devices. Certainly, care needs to be taken when carrying them around. A case is therefore essential, but an ill-fitting one could damage your laptop. The NE-07 from Belkin is the answer. Stylish and comfortable, it'll keep your laptop secure without letting would-be thieves know about the valuable contents. There's also room for your office stationery and all the other stuff you need to carry around – like your sandwiches!

TRUST 4-PORT MINI USB HUB £16
www.trust.com

Having enough USB ports is a constant struggle in the world of modern computing. With so many peripherals using the technology, you can never have too many ports. That's where the four-port mini hub from Trust comes in. Plug it into your PC and one USB2 port is transformed into four. Nothing new there, you may think. That is, until you see how small it is: it's pictured here actual size. It's so tiny, it takes up next to no room on your desk and is ideal for laptops. Even better, if you use small power devices such as keyboards, mice or memory keys then you don't even need to attach any power leads.

WIFI FINDER £20
www.kensingtonuk.com

There's a lot to be said for wireless networks. Unfortunately, tracking down a hotspot can be troublesome. The rigmarole of powering up a notebook, waiting for Windows to boot and then hoping that there's one in the vicinity can be off-putting. What you really need is a small, one-button device that lights up when there's a sniff of Wi-Fi in the air. Ensure that it filters out other signals such as Bluetooth networks and microwave ovens, and give it a range of, say, 60m. Make the device compact enough to fit onto a key ring and you're on to a winner. Hang on a minute...

DURAFLEX KEYBOARD £35
www.hela.co.uk

Spilling drinks on to a keyboard used to mean it was out of action for some time, if not permanently. Not so with the waterproof Duraflex: simply run it under a tap and you're back in action. Dust and food crumbs are no longer an issue, either. The rubber keys are responsive and well spaced, although they'll take a bit of getting used to. This keyboard will suit those whose workplace environment isn't the cleanest of places, or those who drink their coffee using butterfingers.

19-inch LCDs

The new mass-market screen size of choice, 19-inch LCD monitors have just hit the sweet spot. Matthew Richards goes in search of the best buys

Impressively sizeable on the diagonal, a 19-inch LCD is equivalent to a 21-inch conventional CRT screen, and is very much the new big thing. Over the past few months this size of LCD has become the new standard, with mass-market pressures driving down prices by well over £100, making it better value than ever to go large.

So what's so good about a 19-inch LCD? The restrictive native resolution of 1,024 x 768 pixels on a 15-inch LCD gives little room for manoeuvre, or for multi-tasking, so it's no surprise that the 17-inch LCD knocked its smaller sibling off its perch. The problem with a 17-inch screen is that while it has a higher resolution of 1,280 x 1,024 pixels, the 17-inch diagonal doesn't give a whole lot of breathing space for the screen image. However, a 19-inch screen uses the same resolution as a 17-inch monitor, so the extra screen size translates directly into larger, more easily readable text and bigger, more impressive pictures.

Size matters in monitor circles, of course, but what you do with it is equally important. It's hard to imagine that just over a decade ago, most PC users were still using mono screens, experiencing their whole computing life usually in green or amber. As far removed as cheese from chalk, the latest LCD panels offer high performance in a number of different areas.

Display qualities

As a starting point, a quick dab of the auto-tune button should bring the pitch, phase and other screen attributes into razor-sharp, noise-free display quality. Unlike CRT screens, there should be no flicker, while the extremely anti-reflective coatings applied to most LCDs enable comfortable viewing in almost any environment. However, sharp text on a screen barely scratches the surface of what we expect from a monitor nowadays.

The exploding popularity of digital photography over the past couple of years means that the display monitor has become today's photo album. So, whereas a rough approximation of the right colours used to be a good thing in computer monitors, accurate colour rendition and good tonal range are now vital. Both of these areas are difficult to achieve with LCD technology, especially tonal range – maintaining definition in all shades of grey from black to white – since it's notoriously hard to get good, solid blacks from an LCD screen.

Last but not least, once you've finished with all your text and graphics and sorted your photo collection, that nice big 19-inch screen is the ideal place and size for some truly immersive gameplay or DVD-watching. Consequently, as well as offering pin-sharpness, great contrast and brightness and fabulous colour rendition, we also expect the latest LCDs to be fast enough to keep up with all the action of rapidly changing screens. Panel response times are quicker than ever, with many of the screens on test offering speeds of just 12ms. All in all, 19-inch screens have the potential to put ticks in all the boxes on your buyer's checklist, but which is the best buy? Let's take a closer look.

→ **MANUFACTURER:** BENQ **PRICE:** £299
MANUFACTURER'S WEB SITE: WWW.BENQ.CO.UK **FEATURES:** CONTRAST RATIO 450:1, BRIGHTNESS 250CD/M^2, RESPONSE TIME 12MS, ANALOGUE/DIGITAL INPUTS

BenQ FP937s

Simple and straightforward, BenQ has put its efforts into the FP937s's core performance

Notorious for its avant-garde monitor designs, BenQ has adopted a more business-like approach for the FP937s. Pure and simple in its appearance, this screen is almost dull by comparison, with a rectangular base unit and straightforward row of control buttons along the front of the lower edge.

The no-frills approach is reinforced by the lack of built-in speakers or any pivot or tilt facilities. Reflecting falling costs, the BenQ is almost £200 cheaper to buy than it was a few months ago and its core specifications are still impressive. For example, it has both analogue and digital video inputs, respectable maximum brightness and contrast figures and a fast response time of 12ms.

In our tests, using a range of setups and calibration screens and test charts, supplied by the *DisplayMate Multimedia Edition* program (**www.displaymate.com**) the BenQ performed well throughout. Initially, the auto-tune feature brought the picture into perfect alignment without any unwanted video

attributes. Tonal range was also very good, with all transitions in the greyscale being clearly visible.

Plain-speaking approach
The FP937s is also impressive in its colour rendition. The on-screen menu offers 'Bluish' and 'Reddish' options, rather than arcane colour temperature values and there's also an sRGB setting, which is similar to the Reddish option, but provides for better compliance with other sRGB products, such as cameras and printers. However, while it does everything well, there's nothing about the BenQ that sets it apart from the crowd.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

68%

Good overall picture quality, but feature set on offer is quite basic

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→ **MANUFACTURER:** CTL **PRICE:** £299
MANUFACTURER'S WEB SITE: WWW.CTXEUROPE.COM **FEATURES:** CONTRAST RATIO 450:1, BRIGHTNESS 250CD/M^2, RESPONSE TIME 16MS, ANALOGUE/DIGITAL INPUTS

CTX Pg72L

CTX has raised its game with the release of this smarter-than-average panel

The P972L is something of a pleasant surprise. The styling of the panel is quite tasty but things are even better when you reach the not-so-soft underbelly of the monitor. The cunningly designed horseshoe-shaped stand takes up minimal desk space but offers a wealth of ergonomic features, including full tilt, swivel and height adjustments and even a 90-degree pivot facility.

Tonal separation hiccup
Turning to the display itself, a perfectly aligned picture was easily obtained by a single use of the auto-tune feature and the screen image was rock solid through even the highest frequency test charts. However, tonal separation was slightly less than perfect. No matter how carefully we set up the brightness and contrast levels, dark greys tended to merge slightly into black and very light greys washed out into white. This represents no problem at all for general-purpose work, but it does make the screen slightly second-best for picky image editors.

Colour accuracy was very good, both at the 6500K colour temperature setting for imaging and at 9300K, more commonly associated with CAD/CAM work. The P972L also offers a 'Motion Picture' colour mode, complete with all sorts of fine-tuning tweakery to play with, including adjustments for black level, saturation, tint and skin tones. The 16ms response time is also quick enough to keep up with movies and fast-paced gameplay although, as is nearly always the case, the built-in speakers do nothing to enhance the feel-good factor of the high-quality image for DVDs and games.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

80%

You get a lot of monitor for the money, but tonal separation could be better

→ **MANUFACTURER:** LG ELECTRONICS **PRICE:** £359
MANUFACTURER'S WEB SITE: WWW.LGE.CO.UK **FEATURES:** CONTRAST RATIO 700:1, BRIGHTNESS 250CD/M^2, RESPONSE TIME 12MS, ANALOGUE INPUT

LG L1980U

Want a monitor with wow factor? The L1980U is a bit of a head-turner

LG's new L1980U not only bills itself as 'the slimmest LCD in the world' but it's immaculately turned out, with a chromed ring of a stand and lustrous black bezel. Further design sensitivities include a pleasantly glowing orange standby light that changes to blue when you power up the monitor, while the rest of the control buttons are stashed away under the front bezel to reinforce the monitor's clean lines.

Super-high contrast

The LG isn't just another case of form over function and there are plenty of practical elements to the monitor's design, including easy adjustments for height and a 90-degree pivot mode. The specs look mighty impressive on paper as well, featuring a massively high 700:1 maximum contrast ratio. The only trouble is that the big contrast figures lose something in the translation when it comes to picture quality. Our test sample was actually so contrasty that, while it might perform well in a brightly lit shop window, it was quite

overpowering under more normal ambient lighting conditions.

On balance, the high-contrast availability is nice for people who like really bright, bold, vivid pictures but, if you're after a real degree of accuracy for image editing, you'll be disappointed. We found that backing off the contrast for more realistic levels made greyscale bars merge into each other at both light and dark ends of the scale.

Of course, not everyone is into digital photography and if you simply want a screen that looks fabulous and supplies a high-impact, lively picture, the LG is a strong contender.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

74%

A design masterpiece, but the LG suffers from a hyperactive picture

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→ **MANUFACTURER:** PHILIPS **PRICE:** £249
MANUFACTURER'S WEB SITE: WWW.PHILIPS.CO.UK **FEATURES:** CONTRAST RATIO 700:1, BRIGHTNESS 250CD/M^2, RESPONSE TIME 12MS, ANALOGUE INPUT

Philips 190S5FS

A full £50 cheaper than most of its nearest rival, can the Philips really be any good?

The Philips 190S5FS has surprisingly good picture quality but first, the bad news. As you'd expect in such a cut-throat market, you have to cut a few corners if you want to be cheaper than everybody else. As such, the Philips has no built-in speakers and no height adjustment, swivel or pivot on the base – just the basic tilt facility. All of these you can probably live without anyway, but the other glaring omission is that the 190S5FS is one of only two monitors in the group to have only a single, analogue video input and no DVI digital video port. That makes future-proofing, or the lack of it, a more pressing issue, especially with graphics cards going digital in a big way.

Mixed finish

The quality of the finish is pretty good on the panel itself, although the circular base unit looks and feels a bit plasticky, especially with the silver paint job on our test sample.

Moving on to the picture quality, the Philips is remarkably good. The

auto-tune feature provides a razor-sharp display and there's a wealth of colour temperature options to choose from, including 6500K, 9300K, sRGB, 'original panel' colour and a customisable user-defined setting. Crucially, the colour is accurate, especially at the important 6500K and sRGB settings for image editing.

Further good news comes in the movable feast of tonal range and separation. Unlike many more expensive LCDs, the Philips manages to produce a nice, high-contrast picture without losing detail in lowlight areas of washing out highlights. Overall, it's a great buy at the price.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

82%

If you can live without digital video, here's cracking picture quality at the price

→ **MANUFACTURER:** RELISYS **PRICE:** £229
MANUFACTURER'S WEB SITE: WWW.RELISYS.CO.UK **FEATURES:** CONTRAST RATIO 700:1, BRIGHTNESS 300CD/M^2, RESPONSE TIME 25MS, ANALOGUE/DIGITAL INPUTS

Relisys TL995

Straight up from the bargain basement, does the TL995's performance outweigh its price tag?

The Relisys TL995 is only just more than half the price of the most expensive models in our group. Better still while it's £20 cheaper than the Philips on test, it features built-in speakers and dual analogue and digital video inputs, neither of which you have on the other model. The spec sheet is even more impressive in terms of contrast and brightness, with high maximum values of 700:1 and 300cd/m^2 respectively. Like looks, however, numbers can be deceiving.

Firing up the Relisys, the first thing we had to do was pump up the brightness and contrast controls to near their maximum levels. Even then, the screen image lacked any real life, compared with other monitors on test. Colour performance was a similar story. While colour rendition was accurate on the whole, vivid colours tended to look slightly muted, giving test screens and photos a slightly lacklustre appearance.

Switching to gameplay and DVD movie-watching, there's more bad news in that, with a response time of 25ms, the Relisys is the slowest-paced panel in the group. In practice, it did manage to keep up with the fastest action in our test games and movies, but the screen lacked the crispness of other monitors in the group.

Basic use only

All of these slight inadequacies make the Relisys a poor choice for photographers, game players and multimedia enthusiasts. However, if you're after a monitor for simple Internet use and office programs, the TL995 still manages to offer a very sharp display and its low-contrast screen makes for many hours of comfortable viewing.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

57%

You get what you pay for with the TL995 – set your expectation levels accordingly

→ **MANUFACTURER:** SAMSUNG ELECTRONICS **PRICE:** £399
MANUFACTURER'S WEB SITE: SAMSUNG.CO.UK **FEATURES:** CONTRAST RATIO 800:1, BRIGHTNESS 250CD/M^2, RESPONSE TIME 20MS, ANALOGUE/DIGITAL INPUTS

Samsung SyncMaster 193P

Samsung's new SyncMaster takes a surprisingly hands-free approach to display technology

The Samsung 193P looks almost identical to the rather swish LG monitor on test. It uses a similar circular base unit, with a neat row of connectors at the back for plugging in video feeds and the DC power from the monitor's external power supply. However, when we looked at this screen a couple of months ago, we found that the counter-balance spring in the stand wasn't strong enough to support the weight of the monitor and it would sag down to the lowest position in its height adjustment over the course of a day. Happily, our new test sample had no such problems.

No-button approach

The exceptionally clean and uncluttered look of the monitor is partly due to the fact that there are no control buttons on the screen itself. The hands-free approach adopted by Samsung has been to supply all picture adjustments via software, from the PC itself. This requires the use of Samsung's *MagicTune* and *MagicBright* programs for adjusting everything from brightness and contrast to colour balance and so on. The software actually works pretty well for calibrating the monitor with a printer attached to the PC but, for our money, we'd rather have the one-touch simplicity of a few control buttons on the screen as well.

As one of the most expensive screens on test, you'd expect image quality to match. The brightness, contrast and tonal range of the Samsung is certainly very good and the colour rendition is accurate as well. However, the overall picture quality isn't noticeably better than the cut-price Philips, making the Samsung an expensive buy for what it is.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

65%

The Samsung is a very good performer, but just seems too pricey

→ **MANUFACTURER:** SHARP **PRICE:** £331
MANUFACTURER'S WEB SITE: WWW.SHARP.CO.UK **FEATURES:** CONTRAST RATIO 500:1,
BRIGHTNESS 220CD/M^2, RESPONSE TIME 16MS, ANALOGUE/DIGITAL INPUTS

Sharp LL-191A

The Sharp has cutting-edge looks, but there's something missing underneath

The Sharp LL-191A has been out a few months now and, while it was very aggressively priced when it was launched, the street price has hardly dropped at all since then, making it quite pricey compared with the competition. Even so, the eye-catching design suggests that the monitor is bang up to date and worthy of your cash. However, take a glance at the back of the panel and you'll notice that there's only an analogue video input. The Philips is the only other screen on test not to have a digital video input, but that monitor is over £80 cheaper than the Sharp.

Calibration letdown

Another disappointment was that the Sharp was the only monitor on test that failed to calibrate itself properly with a single use of the auto-tune feature. Even after repeated attempts, the monitor failed to tune itself properly to the ATi Radeon X800 series graphics card we used, and we had to resort to manually setting the clock and phase adjustments through the less than intuitive on-screen menu.

Once the manual calibration was completed, the Sharp performed well in terms of picture quality. The screen has plenty of brightness and contrast in reserve, making it suitable for vivid viewing, while colour accuracy is maintained when taming things down to ensure photo accuracy and calibration with printers. Indeed, this particular process is simplified by an accurate sRGB mode, which you can switch to from the Standard operating mode at the press of a button.

The response time of 16ms isn't the fastest on test but the Sharp nevertheless made a good job of games and DVD movies.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

62% *Fiddly set-up and no digital video input, but a quality picture nonetheless*

→ **MANUFACTURER:** SONY **PRICE:** £399
MANUFACTURER'S WEB SITE: WWW.SONY.CO.UK **FEATURES:** CONTRAST RATIO 500:1,
BRIGHTNESS 400CD/M^2, RESPONSE TIME 12MS, ANALOGUE/DIGITAL INPUTS

Sony SDM-HS94PB

There's always one that has to be different and this time it's a Sony

In terms of features and performance, this Sony stand out from the crowd. The secret is in Sony's X-Black technology (see our conclusion for details) and the result is an incredibly sharp image with lustrous colour and amazing tonal range. Of course, you have to pay for all this abundance of quality, and the Sony also happens to be the most expensive monitor on test.

Very high maximum brightness (400cd/m^2) and a high maximum contrast ratio of 500:1 are matched by a fast, 12ms response time. The flawless specifications are neatly wrapped in a stylish case that makes the Sony look good on the desk, as well as in its picture quality.

X-Black marks the spot

One of the traits of X-Black technology is that you also tend to see a lot more detail in dark areas of pictures. We noticed this especially in digital photographs, where we could see plenty of lowlight detail that wasn't displayed at all on other screens. However, the trade-off is that there's

no anti-reflective mesh coating on the front of the screen, which makes the Sony's panel much more prone to bouncing back light from windows or room lighting,.

With multiple colour modes, including an sRGB setting, the Sony also uses a three-way set-up for contrast and brightness. This utilises adjustments not only for basic brightness and contrast, but also for backlight level. Using all three adjustments together, it's easy to end up with the perfect balance, while the monitor's excellent colour rendition surpasses even Sony's usually impeccable standards.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

95% *If you want to buy the best, look no further. It'll cost you mind, but it's worth it*

Winners and losers

You don't have to spend a fortune to receive great picture quality, but it sometime helps

Line up all of the eight screens in our group test and you'd easily manage to spot the cheapest model. Sadly, while the Relisys TL995 does offer a surprisingly good range of features for its paltry £229 outlay, including digital and analogue video inputs and built-in speakers, the all-important picture quality is lacklustre. For basic office programs and email, that's not a real problem and the comparatively low contrast offered by the screen is actually quite relaxing if you're going to be glued to it for hours on end but, for photo editing and multimedia, it's a poor choice.

Moving up a rung in the monitor ladder, the Philips 190S5FS is almost as cheap, yet, although it doesn't have a digital video input or any other fancy frills, the picture quality is among the best on test. This makes it a great choice for digital photographers on a tight budget, while the screen performs more than well enough to suit gameplay and movie-watching as well. You start to wonder why anyone would want to spend twice almost as much on one of the most expensive models in the group.

Middle of the road
One of the magic numbers for 19-inch screens, at least on price tags, seems to be £299. Some monitors that cost as much as £500 a few months ago have plummeted to this new figure, where the hottest competition abounds. At this price point, our pick of the crop would be the CTX P972L. The screen has a natty design that incorporates a great range of features, including a space-saving stand that still manages full tilt, swivel, height and 90-degree pivot facilities. The CTX has a fast response time and colour rendition is very good. The only slight flaw is that tonal separation could be a bit better at the lightest and darkest ends of the greyscale.

Similarly, BenQ's FP937s offers excellent picture quality at the £299 price point although, in other respects, its appeal is a little more basic. Spend more and you have the choice of the Sharp LL-191A or the LG L1980U. Yet neither of these two monitors does enough to justify the extra expense.

SPEND £400 AND YOU SHOULD EXPECT SOMETHING VERY SPECIAL IN TERMS OF A 19-INCH LCD

The LG does have a head-turning design and great quality finish but we found the picture too vivid for accurate image editing. The Sharp was tricky to set up and, although the picture quality was good, it wasn't noticeably better than on the Philips or BenQ.

Spend £400 and you should expect something very special in terms of a 19-inch LCD. However, that's not what you get in the shape of the Samsung SyncMaster 193P. Sure, it looks a high quality piece of kit and the picture quality is good, but it's not remarkable and certainly doesn't justify the extra expense, unlike the Sony.

X-Black explained
Sony's SDM-HS94PB uses the company's X-Black display technology, which immediately sets it apart from all the other screens on test. It's worth bearing in mind that a conventional LCD panel only transmits a tiny two per cent of the available light from its CCF (Cold Cathode Fluorescent) backlight lamps. This is wasteful on power and has the effect of dulling down pictures. Originally invented as a way of brightening up the screens of laptop computers, while reducing the drain on their beleaguered battery packs, Sony's X-Black technology has now found its way onto some of the company's desktop LCDs. Crucially, this enables much better performance in terms of picture clarity, tonal range and colour performance.

→ LCD FEATURES

Model	BenQ FP937s	CTX P972L	LG L1980U
Contrast ratio	450:1	450:1	700:1
Brightness	250cd/m²	250cd/m²	250cd/m²
Response time	12ms	16ms	12ms
Viewing angles	130h, 130v	140h, 135v	160h, 160v
Video inputs	Analogue/digital	Analogue/digital	Analogue only
Speakers	No	Yes	No
Mains adaptor	Internal	Internal	External
Dimensions (W x H x D)	415 x 426 x 180mm	430 x 410 x 190mm	424 x 418 x 260mm
Stand adjustments	Tilt	Tilt/Swivel/Height/Pivot	Tilt/Pivot
Warranty	3 years	3 years	3 years
Rating	**68%**	**80%**	**74%**

While any of the screens on test is more than adequate for general office jobs, the difference between all them and the Sony is massive when it comes to the entertainment side of computing, such as gameplay, DVD movie-watching and, most especially, digital photo viewing. It's almost like the difference between looking at photos on matte and then glossy photo paper. For once, the most expensive piece of kit in the group is not only good enough, but also different enough to make it worth the extra outlay. ◼

PC Answers

EDITOR'S CHOICE

Simple, clean lines are just the tip of the iceberg with this quality Sony product, which is certainly worth its premium price

Philips 190S5	Relisys TL995A	Samsung SyncMaster	Sharp LL-191A	Sony SDM-HS94PB
700:1	700:1	800:1	500:1	500:1
250cd/m²	300cd/m²	250cd/m²	220cd/m²	400cd/m²
12ms	25ms	20ms	16ms	12ms
160h, 160v	170h, 170v	178h, 178v	160h, 160v	170h, 170v
Analogue only	Analogue/digital	Analogue/digital	Analogue/digital	Analogue/digital
No	Yes	No	No	No
External	External	External	Internal	Internal
424 x 418 x 260mm	425 x 422 x 195mm	424 x 418 x 260mm	419 x 409 x 213mm	480 x 440 x 260mm
Tilt	Tilt	Tilt/Swivel/Pilot	Tilt	Tilt, swivel and height
3 years	3 years	3 years	3 years	3 years
82%	**57%**	**65%**	**62%**	**95%**

Ulead VideoStudio 9

Budding film maker **Shaun Weston** tucks into another tasty video-editing morsel, but is there enough meat on the bone?

It may add weight to this review if we first concede that we're huge fans of *Adobe Premiere Elements*. It's to the credit of Ulead and its obvious efforts to not only keep up but possibly usurp the market leaders,

audio manipulation (including intelligent volume levels and custom music creation), output to mobile devices (3GPP) and new effects and transitions that can even simulate particle effects (such as rain). Where it

THIS IS A COPIOUSLY TOOLED-UP AND CLUED-UP APPLICATION THAT LOOKS RATHER SNAZZY, TOO

that we find ourselves mightily impressed with *VideoStudio 9*.

A cumbersome package that took no less than 15 minutes to install, it's nevertheless a copiously tooled-up and clued-up application. For those who care about such things, it looks rather snazzy, too.

We like tools where we expect to find them. We also like the natural progression of steps involved in filmmaking to be reflected in the software we use. *VideoStudio* covers both of these fundamental bases and adds to them, dividing the main interface into simple-to-navigate, discrete working areas.

It has improved in the following key areas compared with version 8:

perhaps fails to keep up with the competition is in areas such as colour correction, which is fine if you don't mind the lack of detail and clarity it provides, and also resource digestion, which *Premiere Elements* seems to have won hands down. We still marvel at how the latter manages to keep such a traditionally RAM-hungry application running so smoothly.

It looks so easy

Video-editing can be a laborious task if you're impatient, prone to error, or both. Yet things are so much easier these days, especially when it comes to splicing together our home movies. As with most 'consumer-friendly' video-editing application,
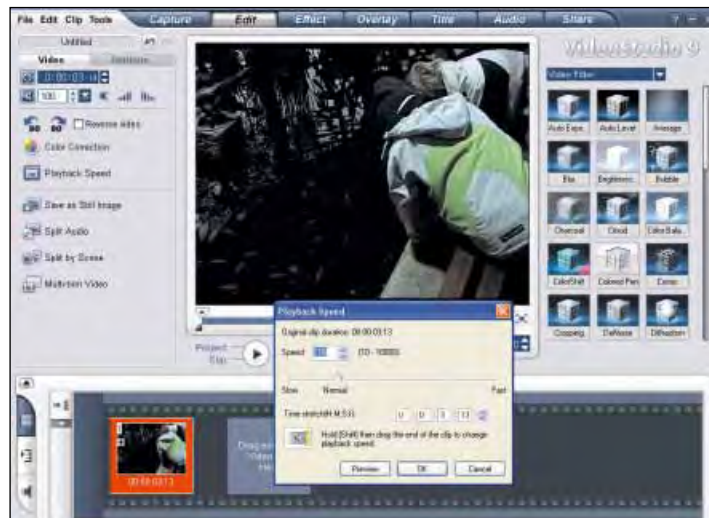
Where **Elements** *uses keyframes for standard playback speed manipulation,* **VideoStudio** *employs a Time stretch function*

To really get into the details of either your clips or effects, an option to expand your monitor window is perfect

VideoStudio offers a number of options before you even get to the main interface.

First is the DV-To-DVD Wizard, which takes the whole job of capturing, editing and burning to DVD out of your hands. Really, there's nothing else you need to do after you hit a couple of buttons with this option. However, if this is really what you want to do, why on earth did you invest in that wonderful but expensive digital camcorder? Isn't the whole point of being a filmmaker geared towards getting on to your PC and chopping bits here and there, and adding your own music and effects? Still, this option works very well if that's your cup of tea.

Templates limit creativity

The next option focuses on templates and is called Movie Wizard. Again, this removes any learning curve or creative bent on your part, which irritates us no end. Our recommendation, having parted with a fair few notes for this software, is to opt for VideoStudio Main Editor. This is where the cement and sand is mixed with the water before you fold it by hand with a large creative spade.

Take care not to get bogged down by the array of tools at your disposal. However, these tools are also there to be played with, and you'll do no harm putting the Titles section to task to see if it's actually more flexible than *Elements* or *Pinnacle Studio* (it isn't). One of the best fun elements is the included *Flash* animations, which can help to add a touch of pizzazz to your otherwise flat holiday clips.

Yet when we step back and look at the big picture, *VideoStudio* offers a large creative canvas with more metaphorical paint to chuck around than you'd find at a Jackson Pollack exhibition. What it lacks is enough punch and power to go the distance with the most ambitious of amateur filmmakers.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

77%

This is another editing marvel, but unfortunately no new ground is broken

Spyware Doctor 3.2

Mike Williams wonders if this versatile spyware detector will tempt you away from Ad-Aware

You've installed a firewall and anti-virus tool, but does that mean that you're safe online? Unfortunately, no. Spyware, browser hijackers and another annoyances still have many ways to infest your PC, and that's why it's worth having a dedicated spyware tool to remove them. There's no particular need to pay for one, of course: comprehensive tools such as *Ad-Aware SE Personal* are available for free. So we wondered if *Spyware Doctor* was so effective that we'd be persuaded to part with our £16. We ran the two against each other to find out.

The bare statistics of our first test didn't look good. *Spyware Doctor* has fewer signatures in its database (26,840 when we tested, against 30,122 for *Ad-Aware*). Furthermore, running a Quick Scan in *Spyware Doctor* took over 25 minutes, while *Ad-Aware's* Smart System Scan was complete in under six.

Signature totals don't tell you everything. Although *Spyware Doctor* was slow, that's partly because it scanned more objects (148,507 against 89,816 for *Ad-Aware*). As it claimed to detect 1,141 problems, while *Ad-Aware* only managed 146, was the extra time well spent?

To remove spyware successfully, you first have to detect it, and that makes the total number of threats you discover particularly important. Does that mean *Spyware Doctor* wins, as it lists 1,141 infections detected? Not necessarily, because on checking the scan report, we found that count included multiple entries for the same threat. So, for example, *Spyware Doctor* told us that NS Keylogger had been found on our system, and that installation included 215 different Registry keys. It then counted these as 215 of the infections, even though – as far as you're concerned – it's just discovered one program.

Safe or suspect?

Then we decided to check whether or not this keylogger was installed at all. On closer examination that's not entirely clear. *Spyware Doctor* identified it as present in what we believed to be a legitimate file called jmail.dll, and its associated Registry entries. *Ad-aware* didn't pick this up, *Norton AntiVirus* saw no problems here and Googling for the ActiveX control class IDs didn't reveal anyone else thinking they were a risk.

Furthermore, another innocent program was identified as backdoor Trojan IRC.Comiz by *Spyware Doctor* but not *Ad-Aware* or *Norton AntiVirus*. It began to look like the scans weren't entirely accurate. Could *Spyware Doctor* win us over with its final trick?
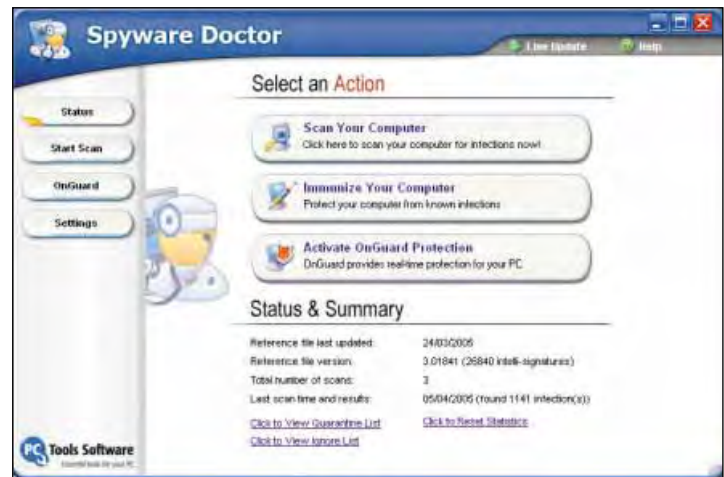
Spyware scans, immunisations (blocking of specific ActiveX controls) and real-time protection are all launched from the same, straightforward interface

Most spyware detectors rely on you remembering to run a scan occasionally, and otherwise leave you entirely unprotected – not this one. *Spyware Doctor* also includes *OnGuard*, which optionally monitors your PC at all times, blocking infections almost as soon as they happen.

This sounds as if it's a good idea and there's a reasonable mix of tools involved: checking for new malignant cookies, programs installing themselves to run at Startup, or known spyware processes from launching at all. There's also a pop-up blocker and keylogger detector.

Power hog

Unfortunately, the concept is spoiled by poor implementation, with *Spyware Doctor* simply running a host of file and Registry checks over, and over again. The end result is that every few seconds *Spyware Doctor* consumed 50 per cent of our CPU resources, reducing everything else to a crawl. You could limit this by reducing the checks *ActiveGuard* makes, but it's always going to be a resource hog at heart.

The final blow was when we noticed that when *Spyware Doctor* was running, *SmartStore.biz* (an e-commerce tool) no longer displayed its main screen properly. It uses an embedded browser window, which *Spyware Doctor* appears to block in some way. Hassles like this can be a nightmare to diagnose, and if reproduced with similar programs suggest *Spyware Doctor* could be far more trouble than it's worth.

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

40%

Slow, accuracy unsound, unusable real-time protection. Stick to Ad-Aware

Scanning speeds aren't great, but at least the scheduler means that the program can be launched automatically

Spyware Detector says it's found 1,090 infections, so why are there only six listed here? It's all down to its ingenious method of counting

Diskeeper 9.0

PCAnswers
EDITOR'S CHOICE

Disk fragmentation has never been so easy, so thorough and fast

Diskeeper includes performance graphs that show how fragmentations affects speed and reliability

Hard disk drive fragmentation is a major reason for performance problems. Windows comes with its own defrag utility, but it requires a manual process to keep track of fragmentation levels and takes forever to run on large hard disk drives. *Diskeeper 9.0* is quick, easy to use and effective, and it comes with scheduling and boot-time options.

Diskeeper cleans your drives up and keeps them that way, including compressed, encrypted and sparse files on NTFS volumes. It can also be scheduled to run either invisibly as a background job or as a manual defragmenter, rearranging files and freeing space on a disk volume.

The interface is uncluttered and easy to use. Several components enable you to view different aspects of your disks' condition, control when *Diskeeper* runs, access commonly used features as well as several shortcuts. You can also view the progress of any tasks running.

Data transfer

The 'Set It and Forget It' feature is one of the most useful features of the software. It enables *Diskeeper* to run automatically in the background, according to a predetermined schedule. You can also use the Smart Scheduling option to direct the software to automatically determine the optimum defragmentation schedule for your disk volumes. You can select several different defragmentation methods to suit your needs.

Another neat feature is Boot-Time defragmentation, which moves directories to a single location. This is useful as Windows writes directories into random locations all over a volume which, in effect, breaks up the free space on the volume.

By grouping all the directories into a single location, larger areas of contiguous free space become available. Therefore, new files are more likely to be written to the volume contiguously. It also defragments the Master File Table, a critical section of Windows NTFS disk volumes.

CHRISTIAN HARRIS

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

90%

Keeps your systems running as fast as they did when they were brand new

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Travel Planner 2005

Obtain clear and concise instructions on your PC or PDA to get from A to B while avoiding C
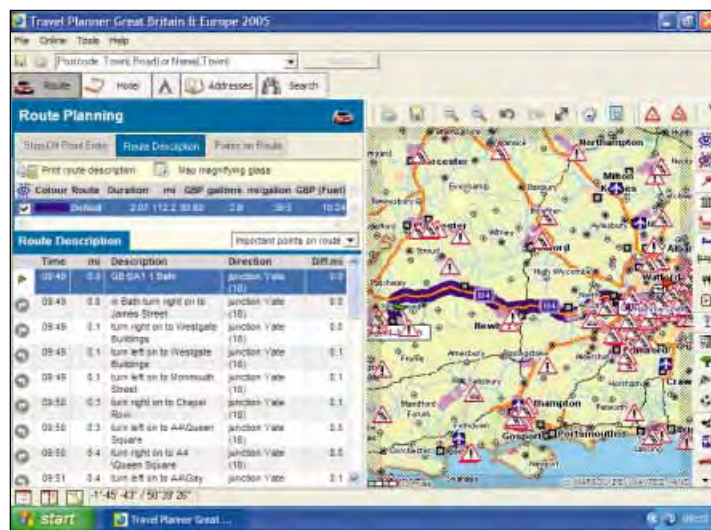
The road from Bath to London is a perilous one, according to the online traffic reports

Whether you're travelling for business or pleasure, planning the journey is essential. Relying on half-seen signposts, garbled radio traffic alerts and a deity of your choosing means you risk (a) getting lost, (b) getting angry, or (c) getting lost and angry. *Travel Planner 2005* aims to put a stop to all this randomness by enabling you to draw up a detailed road map that'll take you to and from a postcode (if UK-based) or picturesque town (if on the continent or Mediterranean).

The route planning aspect is straightforward. Enter the details in the start and end boxes, supplying as much or as little information as you want to, and click 'Calculate Route'. This produces the most obvious itinerary, which you're able to tweak by including/avoiding certain locations/features. The results can be displayed with varying levels of detail, and if you're unsure of your route you can zoom in onto individual roads.

The program doesn't stop there, though. Brief traffic reports can be downloaded and applied to your planned route, warning you of possible delays. Another impressive feature is the ability to search for a raft of leisure venues and tourist-friendly locations. You can either make this specific to your chosen route or just treat Europe as your fantasy holiday destination, looking for places of interest up and down the land.

Ich möchte einen Hotelraum

Less successful was the attempt by Map & Guide to integrate a hotel-booking element to the program. The engine uses two recognised hotel booking systems, but it was hit and miss whether you could reserve a room online. Occasionally, the booking screens would display in German – not particularly helpful.

Despite the shortcomings in the room-booking service, the program more than makes up for these with the level of information it's able to supply when it comes to planning journeys and holidays. Worth a closer look.

CLIFF HOPE

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

78%

Useful for road trips, holiday planning or simply seeing what Europe has to offer

Registry Mechanic 4.0

Cleaning your Registry supposedly boosts performance and improves PC stability, but there's a potential snag, says **Mike Williams**

When you install most applications, they'll add a host of new entries to your Registry: program settings, file associations, fonts, an Add/Remove Programs entry and more. That would be fine if they were all removed when you uninstalled the application later. Unfortunately, they rarely are and the end result is a Registry that becomes larger and slower as you use your PC.

There's no need to put up with this situation, though. Set *Registry Mechanic* running and it promises to

WE'RE A LITTLE NERVOUS ABOUT ENABLING PROGRAMS TO TINKER WITH OUR REGISTRY...

scan your Registry, fixing errors and discarding all the junk entries it currently contains. As a bonus, it'll check your Start menu for shortcuts pointing to files that no longer exist.

We're a little nervous about enabling programs to tinker with our Registry, but *Registry Mechanic* comes with two layers of protection. First, it makes a backup of any Registry keys it changes, so you can restore them later. Second, Windows XP users can also have a System Restore point set before

any repairs, offering another way to recover if we run into problems later. Suitably reassured, we started a scan.

The scan process

Despite what the authors call their high-performance algorithms, it took a fraction over 14 minutes to perform a full scan on our PC, eventually reporting 192 problems. Faster scans are available, if you're willing to accept even fewer checks. By way of comparison, *Registry First Aid* (**www. rosecitysoftware.com**) spent around

six minutes identifying 1,225 issues with our Registry. In addition, *Registry TuneUp* (**www.acelogix.com**) ran for only three minutes 20 seconds, yet still claimed to detect 1,325 Registry problems needing to be fixed.

Registry Mechanic is clearly a loser in speed terms, but don't take the problem count as a straightforward measure of program quality. Both *Registry First Aid* and *Registry TuneUp* boost their totals significantly by assuming empty Registry keys are
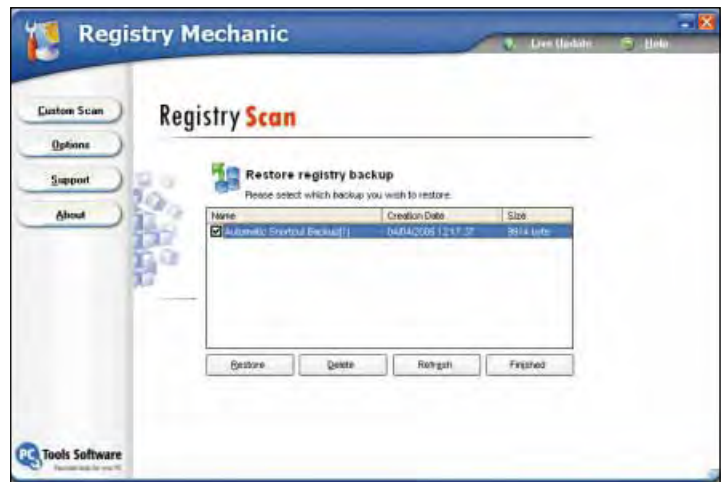
Registry Mechanic's *own backups can be used to restore the Registry, if something goes wrong*

errors that should be deleted, but we think this is a step too far. An application may well gain some useful information simply by checking for the presence of a key, so *Registry Mechanic's* approach of leaving these entries is much safer.

Risky business

Once a scan has completed, *Registry Mechanic* highlights problems in various groups. Experts might then decide to browse each problem in turn, deciding to fix or leave each entry individually. If the program has found hundreds of issues, however, then you'll probably take the easier option, click Repair and enable *Registry Mechanic* to fix everything in one go.

Is that a good idea, though? Maybe not. *Registry Mechanic* was the only cleaner to identify one Startup program entry (dumprep) as incorrect, and mark it to be deleted. Perhaps this was because the program checked for a file called dumprep, when the actual name is dumprep.exe? Windows

doesn't care, though: this is a legitimate file used for error file reporting, yet *Registry Mechanic* would have stopped it running when our PC starts. No great disaster in this case, but what if it removed something more important without you noticing?

This particular error will probably be fixed, but it does illustrate why we wouldn't trust or pay for any Registry cleaner, not just this one. The benefits of deleting these redundant Registry entries are far outweighed by the problems you could encounter from one incorrect removal.

→ PC ANSWERS VERDICT

Ease of use ●●●●○
Features ●●●●○
Performance ●●○○○
Value for money ●●○○○

→ Overall

45% *Slow, costly, and could potentially remove legitimate Registry entries. Avoid*

Expect to spend some time watching the progress bar: a full Registry scan took 14 minutes on our PC
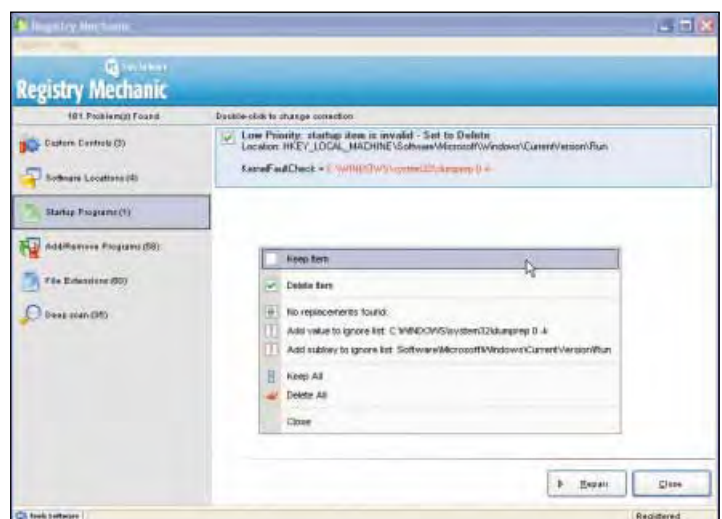
Problems are categorised into different groups for easier browsing

Fo2PiX ArtMaster

You can apply effects to your digital photos with this package, but is it worth the high price?

ArtMaster **gives you help every step of the way – here we're applying a chalk effect**

Fo2PiX may well enjoy its celebrity endorsement by Sir Peter Blake, the chap behind the Beatles famous Sgt. Pepper album cover, but we're not convinced so easily. The key idea behind *ArtMaster* is sound: create artworks from your conventional digital photos. These can then be printed out – perhaps given away in greetings cards – and so on. Fine, but it costs £195. That's a lot of money by anybody's standards, knight or not.
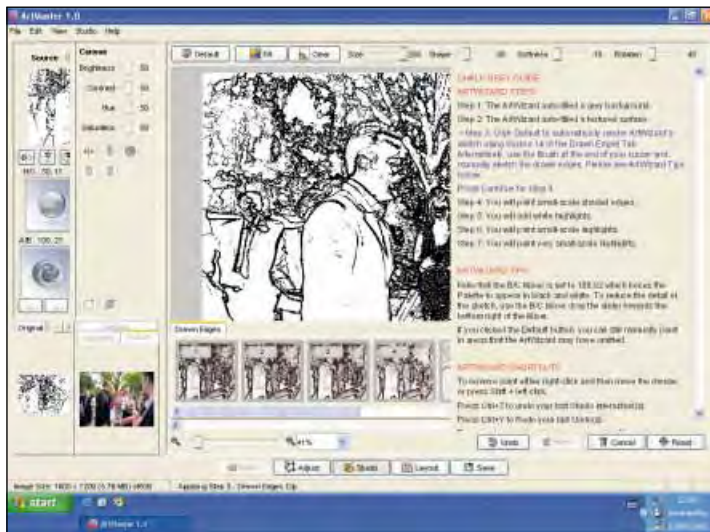
The program includes ArtWizards, which enable you to automate the process of applying effects to your photos. However, you can buy applications for around £50 that can do processes like this – small names such as *Microsoft Digital Image Suite* and *Adobe's Photoshop Elements*. These packages can do a wider variety of things for your digital photography than *ArtMaster*. Should you wish to try out *ArtMaster*, though, you can download it from **www.fo2pix.com** and you can use it up to ten times before you have to register and buy it.

ArtMaster does, however, offer more than just automated processes for your digital photos. The application separates your pictures into elements that *ArtMaster* calls Sources. These

individual elements can then have different effects applied to them, while you can also apply ArtWizards at this stage. Each of the seven ArtWizards covers a different style of fine art.

Does it measure up?

Ultimately, however, it's not enough. True, the software is very easy to use. There's help at every stage, while most processes can be applied in a single click. Yet this helpful approach is very beginner-ish, while in contrast, the price just doesn't suggest that it's a beginner's package. Neither does the 500MB of RAM recommended for its use. If you're serious about photo editing, go and buy a more complete photo-editing suite instead.

DAN GRABHAM

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

45% *Too expensive and not comprehensive enough. Only buy it if you've got money to burn*

Photo Explosion Deluxe 2.0

Photo Explosion Deluxe offers thousands of creative combinations: we check them out
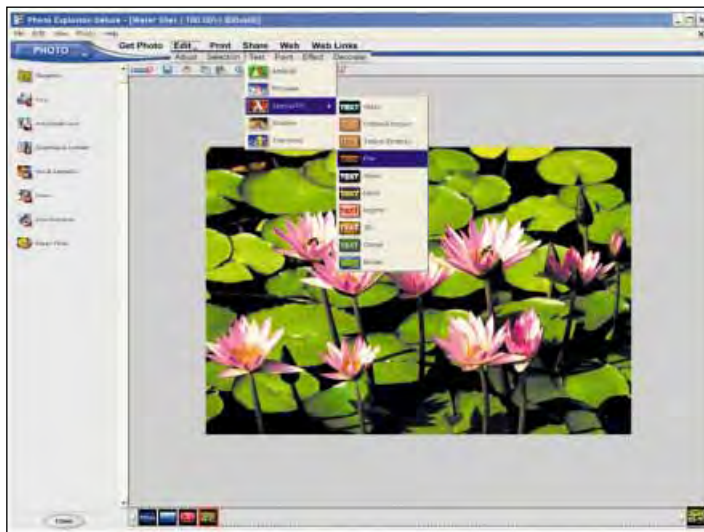
Photo Explosion Deluxe **is adequate for fixing and sharing photos, but not much more**

The digital imaging market has never been so buoyant, thanks largely to the popularity of digital cameras (and other imaging gadgets) and an increase in the number of people making home prints. Indeed, there are literally dozens of programs that promise to delivers powerful photo-editing features, spectacular special effects and professional-quality photo projects. Is this one any different? Well, yes it is, but only in the value stakes.

Overflowing with utilities

Photo Explosion Deluxe 2.0 is packed with fun and useful utilities to help you get the best from your digital camera. In particular, it provides a relatively effective one-click SmartEnhance tool, red-eye removal, and an array of versatile photo-editing tools. Once your creative juices start to flow, you can create photo calendars, scrapbooks and wide-angle panoramas – or even morph one photo into another. Additions to the latest edition include new special effects, a stamping tool, improved lighting controls and 500 new photo projects, as well as the ability to create photo montages, screensavers and morphs.

In addition, you can create business cards and greeting cards, and simple Web pages. There are also various goodies, all of which are counted in the hundreds, including fonts, stock photos, photo frames and text effects. There really is a lot on offer.

Photo Explosion Deluxe 2.0 is no *Photoshop*, that's for sure. Heck, it's even nowhere near *Paint Shop Pro* in terms of features. The suite is aimed at first-time users looking for a cheap package to get the most mileage from their digital images. The interface is a bit of a nightmare and you'll probably use only a fraction of the extras, but *Photo Explosion Deluxe 2.0* is hard to criticise too heavily, considering what it includes for the money.

CHRISTIAN HARRIS

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

71% **Photo Explosion Deluxe** *offers most of the features needed to fix common problems*

→ **MANUFACTURER:** DELL **PRICE:** £878 **MANUFACTURER'S WEB SITE:** WWW.DELL.CO.UK
FEATURES: INTEL PENTIUM-M 1.6GHZ, INTEL 915GM CHIPSET, 14.1-INCH, XGA RESOLUTION, 40GB, DVD/CD-RW COMBO, WI-FI, BLUETOOTH, MODEM

Inspiron D610

Dell's Latitude notebooks can be found on office desks throughout the world. **Jeremy Laird** says you should think twice before taking one home

The Inspiron notebook range from Dell is a big hit in the home and leisure-use laptop market. However, the Round Rock, Texas giant also has a crushingly successful line of notebooks aimed at corporate users, namely the Latitude range. Question is, if you're buying privately rather than for a business, does it make any sense to land a Latitude?

Well, make no mistake, in terms of aesthetic appeal, the D610 is a distinctly joyless effort. Corporate notebooks aren't sold on looks and this is a deeply anonymous laptop in the tried and tested Latitude fashion. Still, it's well assembled and no doubt built to withstand the abuse typically delivered by busy business users rather than careful private owners. What's more, the appearance of both a trackpad and trackpoint means aficionados of both input methods are well catered for. However, the best aspect of the chassis is its size and weight. Short of a true ultra-light, this is about as compact and portable as you could wish for at just over 2kg.

Well specified

As for the overall specification, it's very much par for the second-generation Centrino course – and that's mostly good news. You certainly won't find us complaining about the 1.6GHz Pentium-M processor. It delivers more

memory) and the latest 533MHz Pentium M bus. It also delivers decent battery life. In testing we achieved between two-and-a-half and three hours depending on usage.

As you'd expect from a system designed for business use, there's a full gambit of networking capabilities, including Intel's b/g Wi-Fi adapter, Gigabit LAN and Bluetooth. Graphics duties, meanwhile, are handled by Intel's GMA 900 chip running on a PCI Express graphics interface. It's no 3D gaming powerhouse, but it's among the best integrated video chips currently available and comes complete with both VGA and S-Video outputs should you want to hook up a projector for presentations or a TV for video playback.

Display dilemma

As for the image quality of the unit's own 14.1-inch LCD display, however,

Neither style nor finesse feature on the D610's strong point list

SHORT OF A TRUE ULTRA-LIGHT, THE D610 IS ABOUT AS COMPACT AND PORTABLE AS YOU COULD WISH FOR

than enough oomph for all but the most demanding multimedia applications. Likewise, the Intel 915GM motherboard chipset ticks all the usual specification checkboxes, including dual-channel DDR2 memory support (in this case Dell has configured 512MB of 400MHz DDR2

we've some serious dirt to dish. Unfortunately, it's the worst kind of old-school LCD panel. Colours are washed out with poor contrast, while viewing angles can only be described as catastrophic. Response times are poor, too. It's symptomatic of the market the notebook is aimed at:

corporate drones do not require a dynamic and responsive display. They simply need basic viewing functionality and that's all this Dell delivers.

Indeed, you only need browse Dell's Inspiron range to see that far superior notebooks can be had for the near £900 asking price of the D610. For £150 less, for instance, you can bag an Inspiron 6000, which matches or betters the D610 on almost every count and boasts an infinitely more pleasing 15.4-inch widescreen display, albeit backed by a shorter one-year warranty. Furthermore, if it's style you're after, Sony's stunning F-Series notebook, complete with an eye-popping X-Black LCD panel, is also available for around the same money.

There's no doubting the benefits this Latitude offers for corporate users, including Dell's well-regarded support, a three-year warranty and backwards compatibility with existing D-series peripherals such as docking stations and optical drives. In contrast, for private buyers it's probably one to avoid.

→ PC ANSWERS VERDICT

Ease of use	●●●●○
Features	●●●○○
Performance	●●●○○
Value for money	●●○○○

→ Overall

59%

A business notebook that fails to deliver outside of the office

Sapphire X850XT AGP Platinum Edition

Finally, a Radeon-based AGP card that rivals the performance of PCI-Express. **Al Bickham** asks, is it worth the wait?

For those of us stubborn enough to resist the lure of the PCI Express revolution, here's a piece of pleasing news: AGP is far from dead. Online stores such as Dabs and Aria may be swamped with PCI-E graphics cards, but in this case the market doesn't necessarily reflect the requirements of the home user. This is a fact that has finally dawned on ATI and its technology partners, such as Sapphire, the makers of this card.

nVIDIA-based card-makers have been quietly chugging out AGP cards to match their PCI-E ranges for a while now, and that's been a good thing for those who don't see the point of investing in an entirely new motherboard (and inevitably a new CPU, and some DDR2...) simply because they want a new 3D card. To be honest, if you prefer your high-end AGP card to boast a Radeon badge rather than an nVIDIA one, the choice has been pretty slim – until now.

IF YOU'RE THINKING OF GOING FOR A HIGH-END GRAPHICS CARD ON AGP, THEY DON'T COME MUCH HIGHER THAN THIS

Enter the Sapphire X850XT Platinum Edition. It's an absolute roaster of a card, which honks out visuals tidy enough to match its PCI-E counterparts. If you're upgrading from the last generation of AGP cards, such as the Radeon 9800 or nVIDIA 5900, you'll notice a tremendous performance gain in today's pixel-hungry games. There's no doubt about it: this card will not only help your PC make these games look lush, but it'll do so at impressive frame rates. That's what you get when you buy a high-end card – high performance – which as you might expect, is reflected in the price-tag.

To give you an idea of how much of a leap it represents, the X850XT PE clocked a *3DMark 03* score of 9,640 on our test system, compared with 6100 on a Radeon 9800 Pro. It 's also happy as Larry playing *Far Cry*, one of the most graphically demanding games around, with all the settings cranked up, and it breezes through the likes of *Rome: Total War* and *Doom 3* with impressive speed.

High in power and price

In short, games are faster, better-looking (as the feature-set on the new generation of cards is more advanced) and consequently, simply more enjoyable. So if you're thinking of going for a high-end graphics card on AGP, they don't come much higher than this. You'd have to be prepared to spend in excess of £300 on a graphics card, though.

For the past few years, nVIDIA-based 3D cards have, generally speaking, given ATI Radeon-based cards a run for your money, and it seems this hasn't changed. However, at this level of performance, the X850XT takes the crown on AGP performance. It's just ahead of nVIDIA's 6800 Ultra series of cards in the speed at which it puts out the visuals and that's reflected in the price.

A 6800 ultra will generally set you back a few quid less, depending on what sort of board you go for. In the real world however, the performance difference between this card and the 6800 Ultra range is hard to detect with the naked eye. If you're looking for a high-end card like this, shop around and see what you can find. Are you prepared to pay more for just a few more frames-per-second?
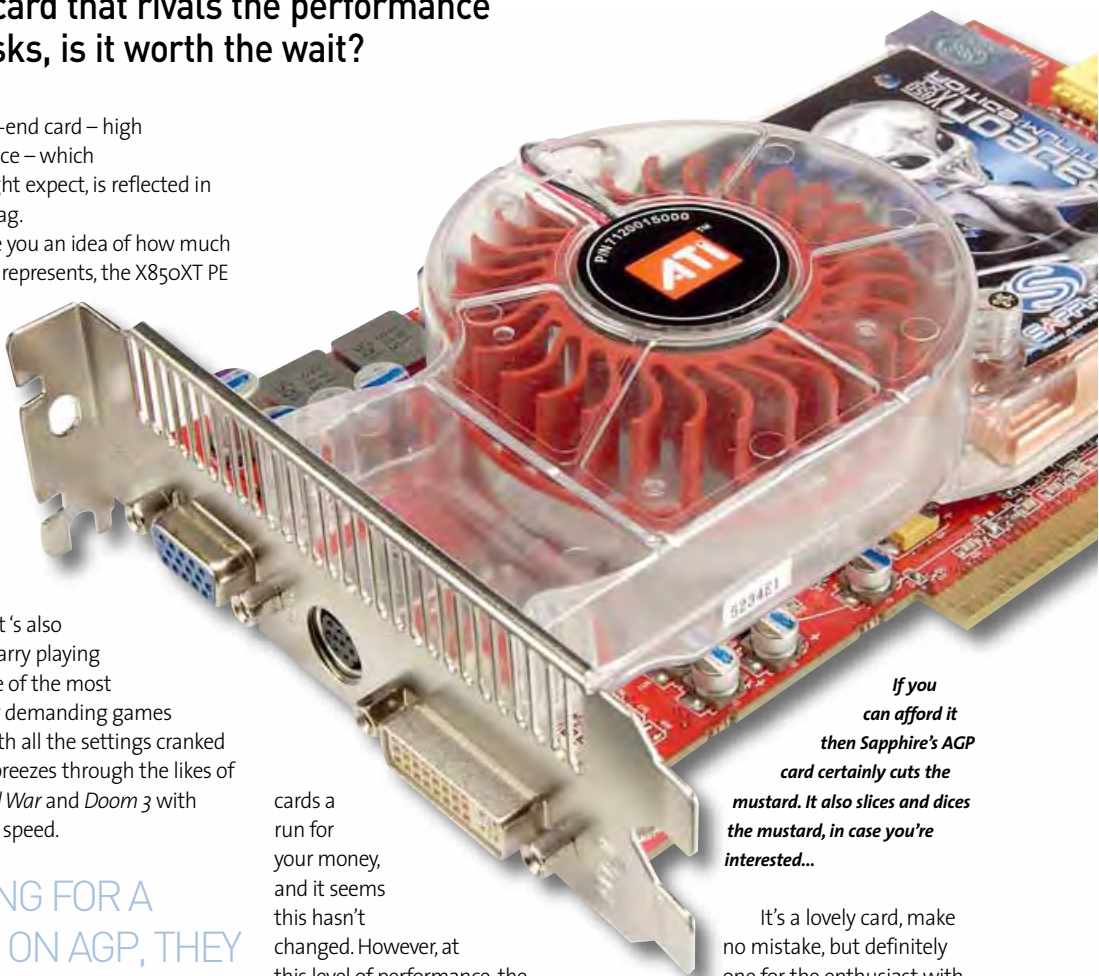
If you can afford it then Sapphire's AGP card certainly cuts the mustard. It also slices and dices the mustard, in case you're interested...

It's a lovely card, make no mistake, but definitely one for the enthusiast with disposable income. Most of us will flinch at the £346 price-tag, but hey – you want top performance, you pay top dollar!

→ PC ANSWERS VERDICT

Ease of use
Features
Performance
Value for money

→ Overall

88%

A blisteringly powerful AGP card – with a premium price tag

→ **MANUFACTURER:** AVERATEC **PRICE:** £795 **MANUFACTURER'S WEB SITE:** WWW.AVERATEC.CO.UK
FEATURES: ATHLON XP 64 2700+, 15.4-INCH WXGA TFT, MULTI-FORMAT DVD DUAL BURNER,
512MB RAM, 60GB HD 802.11G WI-FI. WEIGHT: 2.6KG

Averatec 6240

Can you buy a lightweight, leisure laptop for less than £800? Yes you can, says **Dan Grabham,** even if he has a few doubts about it

Let's start by declaring that this notebook is a triumph. It's a genuinely lightweight widescreen laptop that's primarily designed for entertainment purposes. Yet you probably won't have heard of the company behind it. Averatec is big in the US, but only recently has it begun selling its products through a variety of resellers in the UK. It's competing in a couple of market areas to start with, the other being the ultra-portable segment.

Smart value

The 6240, like the rest of Averatec's portfolio, is housed in a smart, magnesium alloy casing and is powered by an AMD Athlon XP 2400+ processor. More on the CPU in a moment. We think that it's tremendous value for money: £795 buys you 512MB of RAM, a 60GB hard drive (80GB is also available) plus built-in 802.11g wireless. Not forgetting, of course, its attractive exterior. Only Sony, Samsung (and Apple, of course) have previously produced widescreen laptops that look anywhere near as

the one area in which this laptop has a real failing. The SiS M760 graphics are on the poor side of pathetic – a score of 161 in *3DMark 03* is truly bad. We need dedicated graphics in an entertainment notebook. However, other entertainment features go some way towards redressing the balance. DVDs can be viewed without having to power up the laptop. For this, there's also a nifty slot-in remote. The same applies to listening to CDs. Averatec claims that you can watch a standard DVD film and you can, but *MobileMark 2002* only rates

the battery at 139 minutes of use. This will drop rapidly with Windows-based DVD playback – non-Windows playback is the way

> *Until it's switched on, this laptop certainly looks the part. But how will it fare once it's up and running?*

MOST MANUFACTURERS HAVE ADMITTED THE HORRIBLE TRUTH: BUYERS ARE LOOKING FOR AN INTEL-BASED MODEL

good as this. However, do watch out for some remarkably good-looking notebooks on their way from ASUS, although they won't be able to compete with this price bracket.

For a notebook to be described as an 'entertainment' model, it has to fulfil several criteria. The first is a DVD writer. Check. The second is decent sound, and that's not too bad. The third is decent graphics. Oops – we have a problem here. Despite the 15.4-inch LCD panel being relatively good to look at (it has a top resolution of 1,290 x 800 pixels), it needs fairly decent graphics to drive it and this is

to go. Speaking of *MobileMark*, the system was only rated at 147. That's below par, but not critical.

Entertain other options

Of course, there are better entertainment notebooks out there. HP, for example, has been producing some excellent leisure pieces for the past couple of years. However, not only are they significantly more expensive, but they're also desktop replacements that weigh twice as much as the 6240.

Yet before we can heap on praise for the tremendous price and weight,

there's another major criticism we have. The 6240 includes an AMD Athlon XP 64 2700+ at its heart. However, Intel absolutely thrashes AMD in the notebook space, and it's a shame that Averatec hasn't taken the decision to implement Intel's Centrino technology here. A Pentium-M married with a brand new 855 chipset would be just what the chaps in the Averatec lab staff should have ordered. Instead, they've gone on price and while that isn't so bad, it's not exactly going to set the world alight. Most manufacturers have admitted the horrible truth: that many buyers are looking for an Intel-based model. It's likely you are, too, and no wonder – Centrino combines mighty processing power without horrendous battery drain.

However, we should really forgive the 6200 for this, because of one crucial factor: that price. Despite the obvious flaws, you're not only getting a tremendous laptop for the reasonably low outlay, but it looks the part, too.

→ **MADE BY:** SEAGATE **PRICE:** £223 **PUBLISHER'S WEB SITE:** WWW.SEAGATE.COM **SYSTEM REQUIREMENTS:** WINDOWS 998SE/2000/ME/XP **FEATURES:** 400GB OF STORAGE, INCLUDED BACKUP SOFTWARE, ONE-TOUCH BACKUP BUTTON, USB AND FIREWIRE CONNECTIVITY

400GB USB/FireWire external hard drive

A small wedge for a large wad of cash. Is the equally large capacity really worth your while?

This is a large capacity hard drive, plain and simple. Yet even hard drives come with added functionality these days, by way of differentiating them from their contemporaries. Seagate has been inspired by Maxtor in its attempt to create a one-touch back-up solution. Pressing the button that's on the front of the drive should update the backup of your PC stored on the drive. You'll have to create an initial backup though.

The drive includes software that enables you to create that initial backup, too. *BounceBack Express* is designed to work with the one-touch backup button, but at the risk of repeating ourselves, only after you've created that initial backup using the software.

Sadly, it's not the best example of restoration software we've seen. We found that *BounceBack* was hardly the most robust of applications – Iomega's, for example, works much better. It moaned when we tried to create our initial backup and it never really seemed much at home.

You won't need any software for general drive use though. As you'd expect, the drive works seamlessly with Windows XP and 2000, although you'll have to install drivers for older versions of the OS.

Because it's such a large capacity drive, it's also powered independently. Unlike smaller, external drives it can't suckle enough juice from your PC's USB port, so you won't be able to use it away from a power point. It's also fairly sizeable – the side is just larger than a CD case and the drive weighs 1.2kg. By way of compensation, the drive is dual USB2 and 400Mbps FireWire.

Thin edge of the wedge

Hitachi has recently announced a 500GB internal drive, but make no bones about it: Seagate's 400GB is no miser – it's a hell of a lot of storage! While £200 is a lot to spend on a back-up drive you'll have no further problems in creating simple and up-to-date backups of your PC's data once you get it all working properly. It's also a fair price for such a capacious amount of storage.

However, unless you're a video, music or photo fanatic, you're unlikely to need anywhere near 400GB of external storage. So ask yourself whether you should get a smaller drive before you sign on the dotted line.

DAN GRABHAM

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

70% *A worthy amount of storage, but you'll need serious amounts of data to make it worthwhile*

→ **MADE BY:** TDK **PRICE:** £70 **MANUFACTURER'S WEB SITE:** WWW.TDK-EUROPE.COM **FEATURES:** DVD+R9, 4X; DVD+RW, 16X4X16; DVD-RW, 16X4X16; CD-RW, 48X24X48

TDK dual-layer DVD drive

With TDK's latest drive you might burn your fingers as well as your discs

TDK has joined the dual-layer party with the DVW-A160416DL, its first dual-layer drive. Yet we've seen this drive somewhere before: TDK has used NEC technology for this drive. Now, you might think that because NEC has its own dual-layer products, TDK would have been competitive with that drive on price. It would also have included a plethora of extras just to make absolutely sure that it won hearts over and above its same-tech competitor. But no, it isn't and it hasn't. There's no cable. There's no audio cable. Instead, you get an 'emergency eject pin'.

They might as well have included a paper clip. Oh, hang on – it's the same thing. You do get mounting screws though, so we suppose that's something of a giveaway...

Redeeming performance

So, after such blatant mediocrity, it's a relief that in terms of performance, 4x dual-layer speed is excellent. Well, what we mean is, it's still not fast enough, but it's as good as anything else you'll find out there.

That's a pretty good summary of this drive. It's excellent in terms of its speeds. 16x for DVD+R and DVD-R is thoroughly decent, too. The 48x speed for CD-R may not be pushing the boundary of the speeds available, but it's a solid performance for a multi-format drive. It won't be too long before we start seeing better dual-layer write speeds, either. At the moment 4x is just not quite fast enough, even if the laser is effectively burning two discs with a phenomenal amount of data.

The supplied software comes in the predictable form of various tools under the *Nero* umbrella: *NeroExpress 6*, *NeroVision Express 2*, *Nero BackItUp*, *Nero Recode* and *Nero ShowTime*. This is quite an impressive suite.

Yet despite the obvious lure of the software and the emergency eject pin, the price is too high: it's £20 more than most dual-layer options. Yes, we know that we mentioned the cost earlier, but we feel the need to run it past you again. TDK just hasn't got the pricing right on this drive. Yes, it gives great performance, but there are cheaper options available. Not least several with very similar specifications. Take time to shop around.

DAN GRABHAM

→ **PC ANSWERS VERDICT**

Ease of use
Features
Performance
Value for money

→ **Overall**

72% *The price and presentation are disappointing – the performance is anything but*

support

HARDWARE HELPDESK

→ **Share your scanner with all your PCs**

→ **Troubleshooting monitor problems**

→ **Slipstream XP SP2 and device drivers**

→ **Persistent printer problems**

STARTS ON PAGE 122

'I have just installed a new 200GB hard drive and Windows XP keeps telling me it's only 127GB in size'

WIN! MORE MEMORY
Boost your PCs with 512MB from Crucial
See page 117

NICK PEERS
Support specialist

NICK'S TIP OF THE MONTH

If you're adding a second hard disk or optical drive to your PC, always check the jumper settings. If they are IDE then you'll need to have one set as the Master, the other as slave. Also, make sure your main hard disk is set as the Master so that Windows can boot.

→ **SECTION CONTENTS**

YOUR SOFTWARE PROBLEMS SOLVED!

ASK THE EXPERTS

If you have a problem and no one else can help, then you need to call in the **PCAnswers** team of experts. They return once more with solutions for you **PAGE 108**

SCAM OF THE MONTH

NEW SERIES!

SECURITY • SECURITY • SECURITY • SECURITY •

Gone phishing

Phishing attacks are on the increase. **Nick Peers** reveals how to avoid being reeled in by the deceptive emails

Phishing (pronounced fishing) is the latest scam sweeping our mailboxes. An email arrives that appears to be from a genuine source such as eBay, Paypal or even your bank. It claims that you need to log on to your account to verify your account details and helpfully provides a link in the email itself for you to click. The email looks genuine, but if you click the link you could be a few key-presses away from surrendering your personal financial information to a malicious third party.
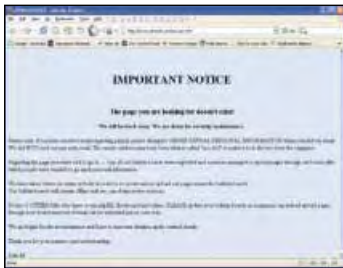
Spoofed Web sites don't last very long before they're tracked down and removed

UK users have proved lacking when it comes to protecting themselves against phishing scams. If you want to check how vulnerable you are, take MailFrontier's Phishing IQ Test at **http://survey.mailfrontier.com/survey/phishing_uk.html** – if you fail, you're not the only one. We only scored eight out of ten in the test, although in our defence, we claimed two emails were fake when they were actually genuine, proving that despite the rise of phishing, some companies are irresponsible enough to encourage people to log on through an email.

Anatomy of a phishing email

This issue we're looking at a bogus email claiming to be from Paypal that's doing the rounds. The annotation on the right reveals the tell-tale signs that expose this email as a fake, but you can save yourself a whole lot of grief by adopting one rigorous policy: never click a link in an email in order to log on to any of your accounts.

If you really think that the email could be genuine, open your Web browser and type in the company's address directly (such as **www.paypal.com**) – that way you're sure of logging into the right Web site.

Report a phishing attempt

If the bogus email claims to be from Paypal or Ebay, forward it on to spoof@paypal.co.uk or spoof@ebay.co.uk immediately, then delete it. You'll soon receive notification that the email has been received, followed by a final confirmation that it's fake. Both companies act quickly to clamp down on this kind of mail, which is why the sites they point to are taken offline so quickly. However, the next fake email is probably already winging its way to your mailbox...

Help! I've given out my personal details!

If you click the link and enter sensitive personal details, you must do two things quickly. First, log on to your account through your Web browser (in other words, type the address in directly; don't click the link in the email again), and immediately change your log-on details – at the very least, change your password. Second, inform the company in question as to what you've done and ask for advice – you may find extra help on its Web site, or you can get more general help from the newly revamped National Hi Tech Crime Unit Web site at **www.nhtcu.org**, which will point you in the right direction. ■

→ FURTHER INFORMATION

OUR GUIDE TO SCAM EMAIL
So how do you know that this email isn't genuine?

1. EMAIL LINKS
Never log on to your account by clicking an email link. It may look genuine, but hover your mouse over it and its true origins appear.

2. WHO'S IT FROM?
Sometimes the email address has been spoofed, so while it looks valid it's actually masking a completely different name. In this case, the address is valid, but uspaypal.com is not a genuine PayPal email address.

3. DIRE PORTENTS
The message will often attempt to shock you into action by claiming your account will be suspended if you don't verify it immediately.

4. LOOKING GENUINE
The email will steal words, phrases and even images from the company they're spoofing in an attempt to persuade you that the email is genuine.

STAMP OUT SPYWARE

Top ten signs of spyware

Your system is acting a little strange, and you think it might be infected by spyware. **Dan DiNicolo** outlines the sure-fire signals to look out for

I f you haven't declared it yourself, you've no doubt heard the call: 'my computer is acting weird'. While everything from a lack of regular maintenance to misbehaving programs may be the root cause, spyware and related threats are increasingly to blame. From system slowdowns and to mysterious changes to your Internet settings, this month we give you the lowdown on the top ten signs that indicate you've got spyware.

Front and centre

The most obvious signs of an infected system tend to be visual. Of these, perhaps none are more prevalent than the first major sign of spyware: the pop-up window. These tend to be *IE*-style browser windows, stripped down to the basics and containing only an advertisement or warning message. These typically appear when you first log on to your computer, or when you fire up your Web browser.

Changes to key browser settings are another dead giveaway in the search for spyware. For example, if you've set your home page to **www.google.co.uk**, but find a different page displayed each time you start up your browser, consider your system infected. This is especially true with *Internet Explorer*, as ActiveX controls downloaded from malicious Web pages can make the changes without your consent.

Another common sign of spyware is the presence of unfamiliar third-party *Internet Explorer* toolbars. In some cases these are loaded directly below the *IE* address bar, in plain sight. In others, the toolbar is installed and loaded but cleverly blended in near a built-in toolbar, so as not to arouse suspicion. To see whether any extra toolbars have been added to your system, open *Internet Explorer* and head to View -> Toolbars.

Anything beyond the Standard Buttons, Address Bar, and Links options are third-party toolbars, and could be spyware.

The last visual clue to keep an eye open for is the unknown or unfamiliar desktop icon. Examples include shortcuts to pornography sites, Internet casinos, or unfamiliar programs. If you do happen to find these, delete them from your desktop, and then use your preferred anti-spyware program to deal with any underlying components that may need to be removed. Whatever you do, don't click them out of curiosity – you may just make things worse.

Crash and burn

Over time, any computer will fall prey to system slowdowns and errors. While these two 'clues' are often just indicative of a need to perform maintenance – removing unneeded

NEW SERIES!

Relentless pop-up ads are one of the most common clues that your system is infected

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→ STEP-BY-STEP GUIDE

Searching for spyware

Making sense of the clues is essential when it comes to spyware diagnosis
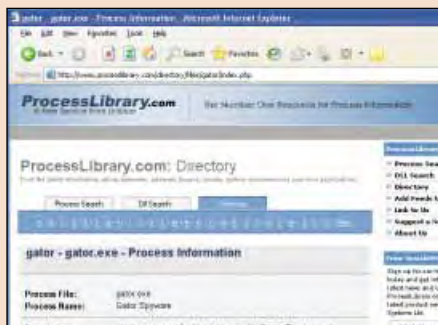
01 One of the best resources for rooting out spyware is the Processes tab in Task Manager. Use the image name information to gather process file names, and then search for these names in the process library at **www.processlibrary.com**.
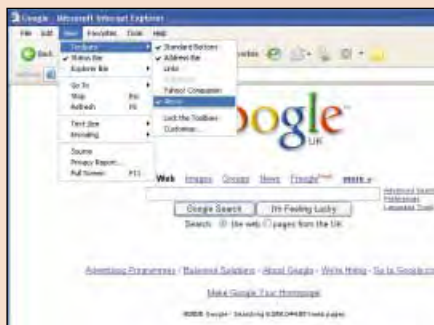
02 If your process list turns up free of spyware, open *Internet Explorer*. If your homepage has been changed or you find a large number of shady sites on your Favorites list, your system could be infected. Check for suspicious third-party toolbars.

03 Many spyware programs try to disable security software. To ensure that these programs are running, open Security Center in Control Panel and ensure each is set to ON. Yellow or red lights might indicate a problem like spyware.

The Google toolbar is legit, but toolbars installed without your permission are almost certainly spyware

→ **IN DEPTH**

Is adware really spyware?

Adware isn't necessarily dangerous, but it can be a threat to your privacy

At the most basic level, adware is a technique whereby a piece of software is supported (financially) through the inclusion of some type of advertising service. While it's commonly lumped together into the broad category now known as spyware, adware is a little different. It typically won't harvest your personal details, or collect information garnered from your keystrokes. However, it may track your surfing activities with the goal of displaying targeted advertisements that you may be interested in.

File sharing programs such as *BearShare* provide a great

example of this technique in action. As part of installing this 'free' program, you must also install a bundled adware program called *WhenU*. This displays ads and coupons in pop-up windows as you surf the Web – in effect, this acts as your form of payment for using a program like *BearShare*.

While there has been hot debate as to whether adware like *WhenU* is just another type of spyware (or not), the *WhenU* service has been given the Spyware Safe Certified designation by Aluria Software. In order to receive this designation, software packages must meet a wide range of

criteria, as outlined at **www.aluriasoftware.com/index.php?menu=sslogo**.

As the lines between what is and isn't spyware become more blurred, it's not unreasonable to believe that what's relatively harmless adware today could be dangerous spyware tomorrow. If you rely on a piece of software that includes adware, then we suggest that you seek out other options. True freeware alternatives that will do the same job almost always exist. If you're having trouble finding them, surf over to **www.nonags.com** and peruse its collection of free software, which is spyware- and adware-free.

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programs, limiting those which start automatically, and performing maintenance such as disk defrags – they often point to the presence of spyware as well.

For example, you may have noticed a recent and dramatic decrease in overall system responsiveness, which may be the result of a spyware program consuming memory as it runs in the background. Or, perhaps you've noticed a marked increase in the number of error messages you're presented with. In both cases, spyware is likely to blame, at least to some degree. This is especially true if you're not in the habit of installing new software frequently. So, if it's much slower than usual (or things just aren't working as they should be), it's time to give your computer a well-deserved spyware scan in an attempt to put things back to normal.

Behind the scenes

While spyware's visual and performance-based clues are relatively easy to spot, others take a little digging. One great example is your list of bookmarked sites in *Internet Explorer*. Even if you've long since stopped using it in favour of *Firefox*, take a moment to open *IE* and review the contents of the Favorite menu. If your system is infected with spyware, you can expect to find links to a slew of shady sites, from pornography, to gambling, to get-rich-quick schemes. We suggest removing items from the list manually, followed by a scan. Typically, anti-spyware programs won't remove anything from this list for fear of deleting something you might need in the future.

Another key indicator of infection is finding that security-

related programs such as your firewall, anti-spyware or anti-virus software have been disabled or shut down. Certain spyware threats (and viruses) include components to disable your protection as a way of ensuring their own continued livelihood. The icons in your System tray will provide a good clue as to whether these programs are active,

as will the Security Center tool in XP's Control Panel.

Part of the reason why spyware often goes unnoticed is that Windows enables programs to run in the background. If you truly want to know what's running on your system, then you'll need to take a peek at Task Manager's Process tab. Here you'll find the names of every process running

If your IE *home page has mysteriously changed, a spyware infection is a virtual certainty*

on your PC, including active spyware programs. You'll need a little help finding out which processes are legit and which are not, but the Web Process Library outlined in the walkthrough on the previous page will help you find the answers.

Phone bill, supersized

The final clue that your system is infected by spyware is one of the most shocking, and arrives in the post. We're talking about your phone bill, and if your system happens to be infected by a so-called dialer program, then you won't be happy when you receive it. These pests are typically installed via Web plug-ins or along with seemingly legitimate programs (often associated with online casinos or pornography sites). Once they've found their way on to your system, they use your modem to place long distance calls to locations worldwide, incurring huge international charges.

Now that you know your clues, put on your best detective hat and get down to the business of spyware sleuthing! ■

⚠️ **HELP!** When you're unsure about the true nature of a program that you're about to install, do your homework first. A search of the program name along with the word spyware on Google will almost certainly yield a quick answer. Alternatively, search for the program in the Spyware Encyclopedia (**www3.ca.com/securityadvisor/pest/browse.aspx**).

→ **NEXT MONTH**

Dealing with browser helpers and browser hijacking.

YOUR QUESTIONS ANSWERED

ASK THE EXPERTS

→ **THE EXPERTS**

NICK VEITCH
security

NICK PEERS
windows

GRAHAM BARLOW
internet

SIMON PICKSTOCK
applications

Don't know who to turn to with your PC troubles? Try us, the experts, with your worrying computer woes

Getting rid of sensitive files

Q As a lawyer I do a lot of confidential work on my computer. I'm now going to sell my PC and have deleted all the relevant files from my hard drive. I understand that this operation only makes the files inaccessible to me, rather than actually deleting them. Furthermore, with the right software they can be recovered. I don't think my clients would be too pleased! Can you recommend the best software program(s) that I can use to make sure that they really have been removed entirely from my PC? **Roger**

A A lot depends on how important it is that you get rid of these files. There are many programs available that do a good job of shredding data on your hard drive so that the original files are no longer retrievable using software. We actually gave away one such program – *Steganos Security Suite 6* – with issue 144. It's able to overwrite data to US Defense Department standards, which we would consider to be adequate for your purposes.

When you've installed the program, double-click its shortcut on the desktop, then select *Steganos Shredder*. Click Next at the first screen, then take the time to deep clean the free space currently on your hard drive (so any confidential files you've already deleted are securely shredded). Next, select the drive or drives you wish to clean by ticking their boxes, but before you click Clean, click Settings and select the middle option that conforms to US Department of Defense standards. You'll find that it's a far longer process, but it's also more secure. Once done, you can then use the program to securely shred files you've not yet deleted before you sell on your PC.
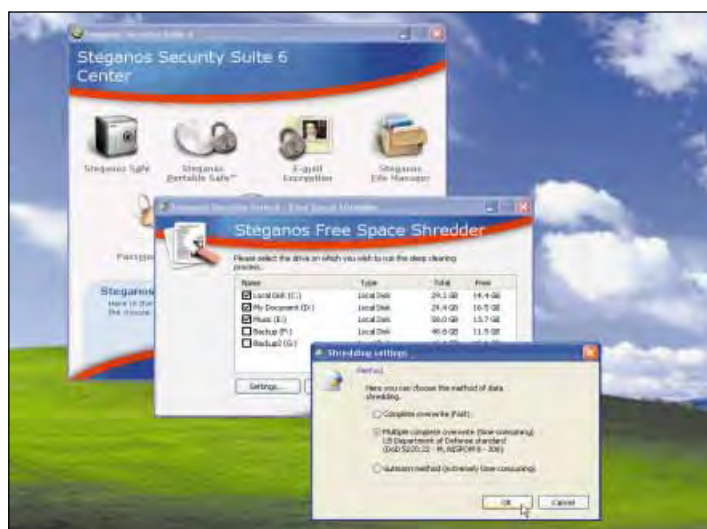
*Want to delete sensitive files from your PC? Dig out **PCA**144 for a free solution*

ONLINE SUPPORT **NAME:** The Software Patch **ADDRESS: www.softwarepatch.com**
Want to quickly check for software updates? This site covers Windows, *Office*, graphics, hardware drivers and more besides. It's pretty easy to navigate too, which is always a boon with these kinds of sites.

→ **SECURITY**

Irritating Incredimail installer

Q I'm running a Dell with Windows XP SP2. Upon starting the PC, when it gets halfway through loading the Taskbar, the following message appears:

**Name: INCREDIMAIL_INSTALL.EXE
Publisher: INCREDIMAIL Ltd
Type: APPLICATION
From: C:\DOCUME1\COLINK1\ LOCALS-1\TEMP\IMINS
While files from the Internet can be useful, this type of file can potentially harm your computer.**

This causes the loading to go no further until I cancel. On the Taskbar it shows 'Open File Security'. I've tried to remove it, as I don't know what it is or what it contains, by right-clicking, but to no avail. The only reference to *Incredimail* is in the Windows firewall, where it was checked in the Exceptions box. I've unchecked it as I haven't seen this before and I don't know what it means.
Colin Kennerson, via email

A *Incredimail* is designed as a replacement for your email program, Colin. Why it's attempting to install itself each time you load your PC is beyond us, but you can soon stop this behaviour. First, restart your PC in Safe mode – the easiest way to do this is click Start -> Run, type msconfig and press [Return]. Switch to the BOOT.INI tab, place a tick in the /SAFEBOOT box and click OK, restarting when prompted.

Your PC will now load Windows in Safe mode. Log on as the master administrator account, then click Start -> Run, type regedit and press [Return]. Browse to the following Registry key: HKEY_LOCAL_MACHINE\ SOFTWARE\Microsoft\Windows\ CurrentVersion\Run.

You should see an entry in the right-hand window called ImInstaller_IncrediMail (or something similar). Make a note of the location of the file it launches, then right-click it and select Delete before closing Registry Editor.

Incredimail is enjoyed by many, save for when it attempts to install without permission

Then you should open the Folder Options Control Panel and switch to the View tab, ensuring you can view hidden files and folders before clicking OK. Now locate the folder containing the file in question and delete it – in Colin's case this was a folder called IMInstaller, which resided in his Documents and Settings\ {Username}\Local Settings\ TEMP folder.

Finally, click Start -> Run again, type msconfig and press [Return]. Go back to the BOOT.INI tab and remove the tick from /SAFEBOOT. Click OK and restart when prompted. You should have removed this annoying installer from your system.

DK software problem

Q Please could you help with a problem I'm experiencing with a CD-ROM called *Become a British Isles Explorer*? I'm having difficulty installing it. Every time I've tried I see an error message telling me that I have a more up-to-date version of *Quicktime* installed so I need to uninstall this and try again. When I've done this, I see a further error message: 1058, the sound decompression software has not been properly installed – this is linked to cx32.exe.

I'm using a Time computer with Windows XP Home SP2 installed.

Problems installing a Dorling Kindersley title in XP? We have the fix

Can you help with any advice?
Des Lee

A Dorling Kindersley's software titles are published by GSP, and you can visit its superb support site at **www.gsp.cc/faq/** or **www. gspsupport.co.uk**. Your particular problem is one common to many GSP titles, and is found on most Windows XP machines running Service Pack 1 or later. Thankfully, a patch has been developed to fix this problem. You can download it from **www.gspsupport. co.uk/media/patches/SP1fix.exe**

DORLING KINDERSLEY'S SOFTWARE TITLES ARE PUBLISHED BY GSP, WHICH HAS A SUPERB SUPPORT SITE

– save it to your desktop. Once it's downloaded, run the patch (click Run if prompted) and follow the instructions, rebooting your PC when it's done. You should now be able to run the program with no problems.

How do I delete index.dat?

Q I'm running Windows XP, and have *Norton SystemWorks* installed. I'm having trouble clearing my Internet History using the program's Fast & Safe Cleanup module and have visited its Web site for more information. It informs me that the problem is caused by a corrupt index.dat file, but that the lack of a DOS mode in Windows NT, 2000 and XP makes it very difficult to delete the file as it cannot be deleted in Windows. Symantec suggests I contact Microsoft customer support for assistance, but I can't either understand the jargon or get the links to work on the Microsoft Web site!

This file grows ever larger each time I connect to the Internet and is now standing at almost 5MB. I would greatly appreciate any help you're able to supply. I've trawled through all my past editions of your magazines but have not been able to find anything related to this problem.
Maxine Clark

A While it's tempting to think of the index.dat file in the singular, the truth is that there are many index.dat files scattered around your PC. They contain records of which sites you've visited, the cookies on your PC and more besides. They're also a right royal pain to get rid of.

There are two ways to remove these from your PC (don't worry, they automatically recreate themselves from scratch when needed). The first method is to download and install the 15-day trial of *PurgeIE* from **www. purgeie.com**. Once downloaded and installed, launch it and click the Set All 'On' button, followed by Purge to clear the lot off your PC. This will include your cookies, but thankfully *PurgeIE* is
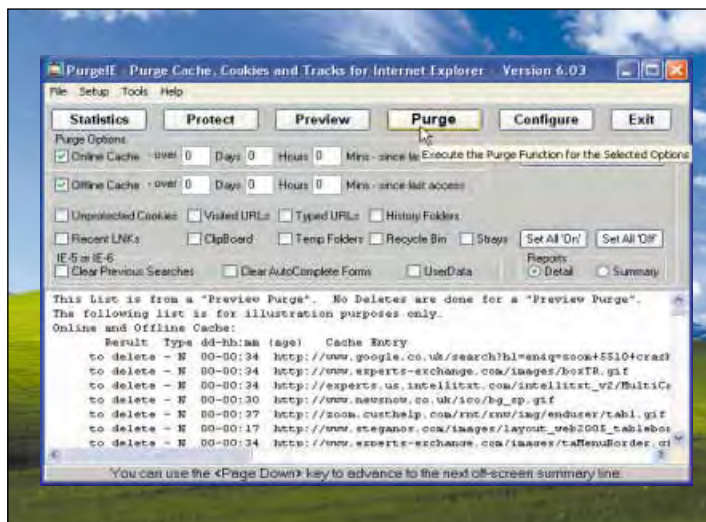
The easiest way to remove stubborn index.dat files from your PC is with **PurgeIE**

savvy enough to warn you when it's about to do this, enabling you to preserve them if you so wish. Once the trial is up, you'll have to pay $20 to register.

Another alternative is to restart your PC and tap [F8] as it starts to boot to bring up the boot menu. Choose Safe mode with command

prompt and press [Return]. Once the command prompt appears you should type cd .. and press [Return] twice, or until the C:> prompt appears. Now type del index.dat /s and press [Return] – all instances of index.dat (except the cookie index.dat file) will be found and deleted. Once done, just press the reset button to boot back

into Windows proper. Job done. Until next time...

Annoying Content Advisor

Q **I've been messing about with some security settings on my computer and have created a problem for myself. When I try to access a site or program a box appears with the title Content Advisor. To remove it I have to type in a password that I created at the time I was messing about.**

I'd be most obliged if you could advise me how I can rid myself of this problem and restore things back to normal.
Harold Bolderson

A We trust you'll be more careful when fiddling with your PC in future, Harold. In your case, fixing the problem is mercifully simple,

Content Advisor *is not the most sophisticated tool, but it does offer some protection against unsuitable Web sites*

especially as you had the good sense to create a password you can remember. Open *Internet Explorer* and choose Tools -> Options -> Content tab. You'll see a *Content Advisor* section at the top of the window. Click the Disable button, enter your password when prompted and click OK to fix the problem.

Content Advisor is not the most sophisticated tool there is: if you forget your password, for example, you can circumvent it by tweaking a Registry entry. Click Start -> Run, type regedit and press [Return]. Browse to HKEY_LOCAL_MACHINE\Software\ Microsoft\Windows\Current Version\ Policies\Ratings and delete the Key value in the right-hand pane (right-click it and select Delete). Exit Regedit and the password should be a dim and distant memory.

→**INTERNET**

127.0.0.1 problem

Q **I'm having a problem with** *Outlook Express*. **It was running fine in the morning, but when I opened it again later on I was unable to send or receive emails, and an error message told me that my password and user word were incorrect. I'm running Windows XP Home Edition with** *McAfee Internet Security 7.0.*

I've tried running *Outlook Express* **with my email virus scan disabled, but I still get the error message. I've checked my email settings and my user name and password are correct, but when I look on the Servers tab I find that my incoming POP3 setting has changed from pop. tiscali.co.uk to 127.0.0.1. If I change this back it runs fine until I next restart my PC, when it reverts and I have to change it again.**
Ian Greenwood

A Some anti-virus tools check email by re-routing them to the IP address 127.0.0.1, so that they're checked by the anti-virus tool itself. In this case, *McAfee VirusScan* is completely innocent and doesn't alter your email settings in this way. It's actually *McAfee SpamKiller,* which makes this change to *Outlook Express* (*Outlook* users aren't affected in this way). For more details on configuring *SpamKiller* with your email program, see **http://forums.mcafeehelp.com/ viewtopic.php?t=42065**, where you'll find a load of useful links.

This problem can be traced to other anti-spam tools too, so if you don't have *SpamKiller* installed on your PC visit your anti-spam tool's Web page for instructions on fixing the problem. Alternatively, remove the tool from your machine. As an aside, we're not big fans of anti-spam utilities such as *McAfee SpamKiller* because they

only work after the email has already been downloaded to your PC, wasting bandwidth.

A better solution is a program like *PopTray* (**www.poptray.org**), which notifies you when an email arrives at your ISP. You can then preview it and decide whether or not you want to download it to your PC. You can also set up rules and mark specific messages as spam to save you the bother of dealing with them in future, just like the commercial utilities.

Some anti-spam tools can cause havoc with email settings in **Outlook Express**

Can't spell-check in Outlook Express

Q I've just brought a new computer from PC World and one of the free programs is *Works 8*, containing *Money*. However, when you install this you can't spell-check emails in *Outlook Express*, so none of my emails have the correct grammar and the spelling is a bit iffy! According to Microsoft, the only way around this is to go and buy *Word*, which is a lot of money – especially when you consider that I've just spent over £1,000. Is there any alternative you can suggest?
Phil, via email

Q Microsoft would like you to believe that *Outlook Express* only works with *Microsoft Word*, but there's a free tool out there that will do the job you want, namely *Spell Checker for OE 2.1*. You can download

this nifty tool from **www.majorgeeks.com/download.php?det=2952**. Once you've installed it, the application integrates seamlessly with *Outlook Express 5* and *6*, and works with all versions of Windows from 98SE upwards. Just click the Spelling button in the toolbar of an open mail message to access it – the interface is identical to that used when the *Word* dictionary is present.

As an aside, Mozilla's *Thunderbird* email client, which is designed to complement *Firefox*, has a spell checker built-in, while *Internet Explorer* users should check out the free *IESpell* add-on at **www.iespell.com**, which makes spellchecking Web forms and forum posts a doddle, and all direct from the *IE* toolbar.

Spell Checker for OE 2.1 *offers spell-checking facilities to* **Outlook Express** *users who don't own* **Word**

Ad-Aware *is an excellent anti-spyware detection tool, but it's not perfect*

Can security products get it wrong?

Q I purchased **PCAnswers issue 144** for *Steganos Security Suite*. I registered the software, but after the installation I found a file and Registry entry for Win32.Adverts.TrojanDownloader, reported by *Ad-Aware v1.05*.

Since that happened I've had problems with Windows, including losing my Net connection at random intervals. Could this be related to *Steganos*?
Mark Baldwin

A We found the same two Registry entries on our system, both pointing towards *Steganos Security Suite* files, namely sfmse.dll and shredderse.dll. We also scanned our system with *Spybot-S&D* and *PestPatrol*, and both flagged the Registry entry that pointed to sfmse.dll as a threat. The problem is, *Spybot* identified it as Primesoft.Safesearch and *PestPatrol* claimed it was AutoSearch, which raised our suspicions.

The Web site **www.pestpatrol.com** contained a detailed description of the AutoSearch threat, which it discovered in

January 2005. This made us even more suspicious, as *Steganos Security Suite 6* was originally released well before this date. We then searched for the malware's tell-tale signs and discovered the Registry key that *Steganos* uses to reference sfmse.dll. However, there are many other Registry keys that AutoSearch creates and none of these were found on our system. Similarly, neither were the two tell-tale DLL files it places (safesearch.dll and autosearch.dll).

In conclusion, what has happened here is that a new threat has – accidentally or otherwise – used a Registry key that is already in use by *Steganos Security Suite*. We've already emailed the two files to *Ad-Aware* for analysis. We'll also be informing Steganos separately, so that it can alert worried program users and other security firms to update their definitions to prevent this misdiagnosis happening again in the future.

As part of this research, we asked Mark to send us a *HijackThis!* log report so that we could ascertain what might be causing his Internet problems. It transcribed he was suffering from the same *Incredimail* installer problem as Colin Kennerson, which is answered on page 109.

DANIEL INVERNESS FOUND OUT HOW TO RECORD STREAMING INTERNET TO MP3, IN AUDACITY

Can't record, won't record, how to record

Your walkthrough (from **PCAnswers** issue 146) on recording from streaming Internet sources using *Audacity* was perfect except for one omission: *Audacity* doesn't support the MP3 format without a third-party plug-in.

What you need to do is download **http://download.riverpast.com/download/lame3.96.1.zip** and extract the lame_enc.dll file. Place this in your Program Files\Audacity\Plug-Ins folder and launch *Audacity*.

Now you should choose File -> Preferences -> File Formats tab and click the Find Library button. Browse to the Plug-Ins folder and select lame_enc.dll before clicking OK. Now you can export to MP3 at last.

Can't set up ICS

Q I have two PCs: PC number one is running Windows Me; PC number two is running Windows 98. The two PCs are connected via an Ethernet cross-over cable and have *Norton Internet Security* installed. They have happily been file and print sharing using an IP address of 10.x.x.x.

PC number one has a USB broadband connection, which I wish to share with PC number two. I've run the ICS wizard on PC number one and tried the set-up disc it created on PC number two, but all this has done is change the IP addresses to 192.x.x.x and lost the connection between PCs. What am I doing wrong?
Ian Kinnear

A A strict condition of using Windows' built-in Internet Connection Sharing is that it changes the IP address of the PC connected to the Internet to 192.168.0.1, Ian. This shouldn't be a problem, because the set-up disc should change your second PC's IP address to match. However, it's possible that *Norton Internet Security* is blocking the connection, in which case you need to reconfigure it to accept your new network settings as a valid connection. Other firewalls work in different ways: the three-step walkthrough examines three of the most popular, but you should also consult your firewall's documentation for more details.

If you'd prefer to keep your existing IP settings, or you can't get ICS to work, consider a third-party solution. *FreeProxy* (**http://handcraftedsoftware.org**) is one-such tool. While a little fiddly to set up – you need to configure it separately for the Web, email and other Internet connections – it's still easier to manage than other proxy servers. Your firewall will prompt you to accept connections from *FreeProxy* when you first enable it and after that you should be able to surf the Web with no problems.

01 *Norton Internet Security* users should select Firewall from the main menu, click Configure, then switch to the Networking tab. Either click Add to manually enter the IP address range that encompasses your network, or Wizard for guided help.

02 *McAfee Internet Security* works in a similar way: launch *Personal Firewall* and select Utilities. Click Trusted & Banned IPs and click Add – you can choose to trust a single IP address or IP address range. Click OK twice when done or run the Setup Assistant for more help.
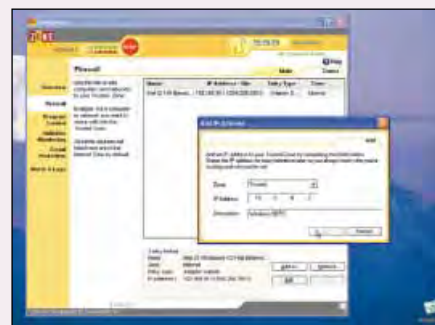
03 *ZoneAlarm* users should select Firewall and the Zones tab. Choose Add -> IP range and type in the range of IP addresses for your network. Alternatively, select Add -> IP address if you're only connected to one PC. Make sure it ends up in the Trusted zone.

→ QUICKIES

Unwanted ad in Outlook Express

Q I keep getting an advert for *Spam Inspector* that appears on my outgoing e-mails. I'm using *Outlook Express* in Windows Me, with *Avast! Antivirus*, *Sygate Personal Firewall*, *Ad-Aware* and *Spybot*.
Paul Nuthall, via email

A It seems strange that an anti-spam tool would adopt this tactic to promote itself, but luckily it's a simple fix. Open *Outlook Express* and choose Tools -> Options -> Signatures. You should see the offending text appear here – or a link to a file containing the text in question. Just delete this and click OK. The ad will no longer bother you – or anyone else.
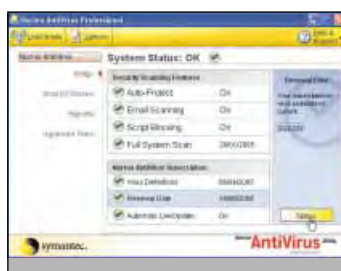
There's no need to upgrade to the latest version of Norton AntiVirus *– just extend your subscription if you prefer*

Should I upgrade to the full version?

Q I've been running *Norton AntiVirus 2003* for the past two years – it came with my PC when I purchased it. The time has come for my repeat subscription payment, but I have a few questions. If I keep subscribing to the 2003 version, am I any less protected than if I was to upgrade to the full version of *Norton*

AntiVirus 2005? What's the difference between the two? In other words, does the subscription update my product to *Norton AntiVirus 2005*? Symantec may be trying to be clever with its sale tactics, but I'm left totally confused!
David Burford

A The major difference between *Norton AntiVirus 2003, 2004* and *2005* is that the latter versions offer some new features. For example, *Norton AntiVirus 2005* introduced a new QuickScan tool that checks for new viruses on your PC the moment updates are installed. These extra features augment the protection already offered by earlier versions, so in effect are more secure and reliable. However, in terms of anti-virus updates, the 2003 version is as well protected as its later siblings.

The price for a subscription is around £20 (note that Symantec no longer directly supports *Norton AntiVirus 2003*, other than through its Web site). Upgrading to *Norton AntiVirus 2005* is £30, or £35 if you go for *Norton Internet Security 2005* instead. Unless you really need or want the extra features, we'd suggest sticking with *Norton AntiVirus 2003* for now and upgrading next year. For further information on subscriptions, check out **www.symantec.com/region/reg_eu/techsupp/subscribe/** to launch the Subscriptions Advisor.

Stop my kids going online!

Q I recently picked up an ADSL Broadband router and connected all the PCs in the house to the Internet. However, the kids seem to overdo it, and I was wondering if there is a way I can limit the access to the Internet or MSN. For example, so

Netgear's WGU624 is just one router that can restrict Internet access to time of day

that they're allowed to log on at certain times and not others (as you can do with AOL) or be able to log on for a stipulated time (say, two hours after which they are automatically logged off).
Isaac

A We contacted Isaac to find out more about his make and model of router, because a select few have the time-management facilities he wants built-in. Sadly, his particular model – a Safecom (**http://safecom.cn/code/sub/category.asp?prdid=7&subcatid=1**) – didn't fall into this category.

There are, however, plenty of shareware alternatives available. Because Isaac has more than one child, a big factor in all of this is the number of licenses he'll have to purchase, as most programs come with a license for a single PC. One tool that's worth checking out is *ConnTroll* (**www.winglink.com/conntroll/**), which is free to try for 30 days and costs no more than $38 for three licenses – and fewer licenses means less to pay.

Once it's installed on the machine that the child uses, you can set it up so people log on to Windows through the program. Then you can use a simple grid to determine when they can have Internet access on a daily basis, enabling you to give them more access at the weekend, for example.

Restricting computer usage

Q As the 'keeper' of several battling teenagers I wondered if there was any way you can assign time slots to user accounts in Windows XP. The scenario would be: George can only log on between 12pm and 2pm; Anna can go on from 2–4pm, and so on. As you know, a sense of fair play, concern for others and so on doesn't evolve in humans until after 25!
**John Waldron**

A We've covered limiting Internet usage using multiple PCs above, but if you want to limit people's time on a single computer you'll need to invest in some third-party software. *AccessBoss* costs just $20 and comes with a free trial so that you can be sure it does exactly what you want it to. Find out more and download it from **www.fspro.net/aboss/**. Install and run the program from your administrator's account and then you can choose which user accounts

to limit access to, and when. The program will even automatically log people off when their time expires – they'll be given enough warning to save any open documents first.

If you'd like to have even more control over user accounts – such as limiting them to certain programs at certain times of day – take a look at *Access Administrator* ($34, from **www.softheap.com/fr.html**) instead.

Is the Registry bloated?
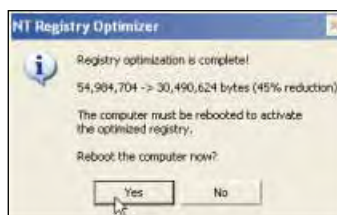
We were shocked – and pleased – to reduce the size of our laptop's Registry by nearly 50 per cent

Q My daughter's laptop runs Windows XP Professional. It seems to be a bit sluggish so I tried *EasyCleaner*, as recommended in the February issue.

While backing up the Registry, I noticed that hers was 52MB compared to my Windows 98SE version, which was only 11MB. Is this normal for XP, or is her Registry severely bloated? She hasn't really used the laptop that much.
John Wreford

A While the Windows Registry seems to get bigger with every new release, 52MB does seem on the high side for your daughter's laptop, John. By way of comparison, we checked the size of the Registry on three Windows XP machines and the sizes varied from 21MB to 54MB, so it appears that there is scope for some optimisation.
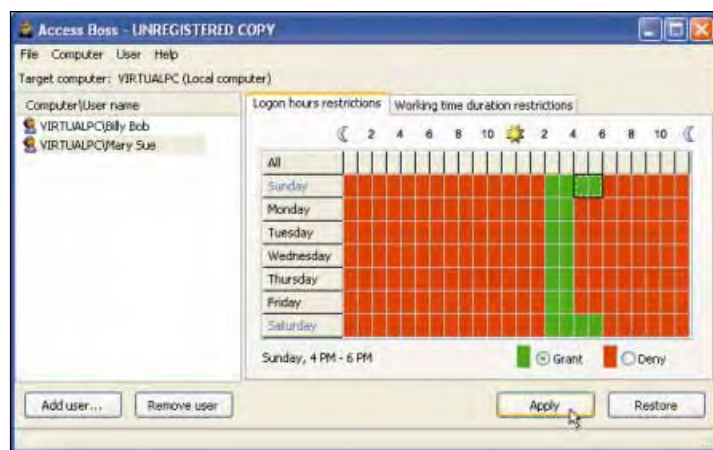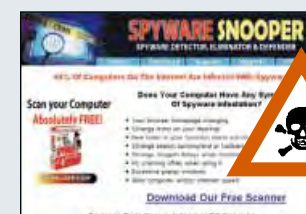

AccessBoss *enables you to limit who has access to your PC, and when*

VIRUS
OF THE MONTH
FALSE PROPHETS

Ignore 'wonder cures' like this until you've found out more about them

There are probably more malicious or rogue anti-spyware and other security tools out there than genuine products. Imagine the scenario: you're browsing the Web when a pop-up claims that you may be infected with some kind of virus. You take advantage of the free online scan (or download the 'free' trial version), and suddenly you discover that – according to the scan – your machine is littered with pests. Before you buy the product on offer, ask yourself this: if you've already got Internet security products as recommended by reputable sources like ourselves on your machine, how did these nasties slip by?

Visit **www.spywarewarrior.com/rogue_anti-spyware.htm** where you'll find a list that very probably contains the product you've been offered You'll see terms like 'false positives work as goad to purchase' and 'no privacy policy' and in some cases, even 'browser hijacking'. 'False positives' mean that the software at best exaggerates the threat posed (typically by cookies) and at worse makes up non-existent threats to scare you into buying the product. If you've downloaded a free trial version you may find it difficult to remove from your machine. If your existing security software can't remove the program consider trying *HijackThis!* (**www.spywareinfo.com/~merijn/**).

! **HELP!** **STAY ON TOP OF MICROSOFT SUPPORT DOCUMENTS** If you want to keep up with all the latest support articles from Microsoft, you need to subscribe through KBAlertz. Just pick the Microsoft programs you want to track and it'll email you as often or as little as you like with the latest articles. **http://kbalertz.com/**

>> QUICKIES

Installing SP2 over other updates

Q I recently purchased a second-hand PC with Windows XP Pro and no updates. I'd already installed various updates – including Service Pack 1 – all the way up to Windows XP Hotfix SP2 Q329115, but then I read in your magazine that it's better to install SP2 in one go. I've got the CD from Microsoft, but is it okay to install SP2 over the existing updates, or must I remove them first?
Irmi Hassan

A You should be able to install SP2 in one go without having to worry about the other updates – SP2 will roll them all up into one neat package and then add any outstanding updates to bring your machine fully up to date. Don't forget to back up any important data first (or make sure it's on a different drive or partition than Windows itself) before you update, just to be safe!

Restricting access to individual program files on a user-by-user basis is possible with the Registry, though it can be complicated

You should be careful when using Registry cleaners. They're never 100 per cent foolproof and almost always remove an important entry from the Registry by mistake. This is rarely catastrophic, but usually

JANE HARRIS REVEALS HOW TO PLACE CONTROL PANELS ON YOUR DESKTOP

Quick control panel access

I wanted access to a particular Control Panel directly from either my desktop or Taskbar. To do this, I visited the Web site **www.computerhope.com/issues/ch000136.htm,** where I found a decent list of Control Panel filenames.

Next, I right-clicked the desktop and chose New -> Shortcut. I typed control cplname.cpl (replacing cplname with the correct filename) and clicked Next. Finally, I gave the shortcut a suitable name and clicked Finish. The icon was wrong, so I right-clicked the shortcut and selected Properties, then clicked Change Icon.

Ignore the warning and click Browse. Choose All Files and browse the Windows/System32 directory for your Control Panel, which will contain the icon that you need.

annoying at the very least. This is exactly why you're to be commended for backing up the Registry before you begin.

You can also attempt to defragment the Registry hive files, too – download a free tool called *NT Registry Optimizer* from **www.larshederer.homepage.t-online.de/erunt/**. On our laptop that had a Registry size of 54MB, it was able to reduce it to just 30MB, which is a reduction of around 45 per cent – pretty good. It's simple to use, too: once downloaded, just install the program and run it. It'll optimise each Registry hive, then tell you how much it's managed to save before prompting you to reboot.

While you're at that Web site, we recommend that you take a look at *ERUNT* as well, which offers a safe way of backing up the Registry that can be recovered using XP's own Recovery Console. Read the detailed instructions, and print them out in case you ever need them.

Confused over Registry article

Q I'm writing regarding the article, 'Keep your PC secure' (**PCA**142). I tried following the steps in the article about preventing certain applications from being run, but had no success. I'm comfortable editing the Registry and such, but I need some extra help explaining key parts of the article.
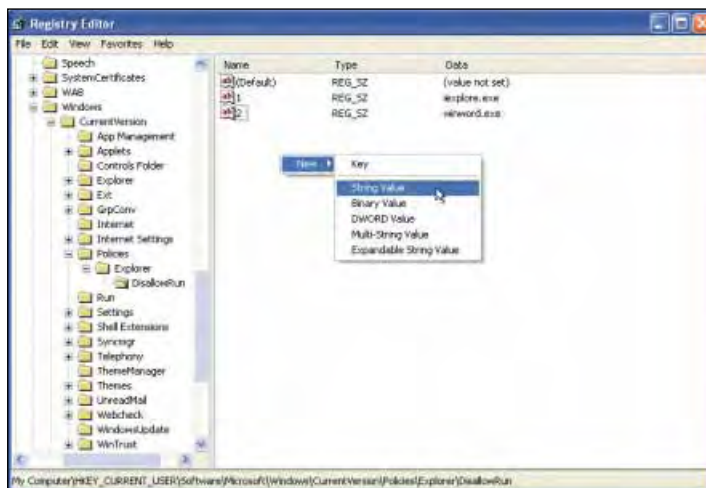
First, Paul Townsend writes about setting restrictions using the HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer key. Can this be done with the HKEY_LOCAL_MACHINE key so that it affects all users? He then goes on to talk about creating a DWORD value called DisallowRun before right-clicking the Explorer key and creating a new sub-key called DisallowRun. However, when I right-click the Explorer key I only get an option to create a new key – is that what I should choose?

Finally, he says that you can define the applications that can't be run by numbering them consecutively. How do you go about doing this? I'm at a total loss for this one. Can anyone do a screenshot for me to show me exactly what is meant by this? Thanks.
Andy Pugh

A Unfortunately, you can't use the HKEY_LOCAL_MACHINE key in Windows NT-based machines to restrict access to all users, Andy. The only way to administer such changes is to log on to each user separately – each user's HKEY_CURRENT_USER data is stored in the ntuser.dat file inside their personal

Documents and Settings folder – and then manually make the Registry changes there.

There's really one way to speed up the process and that's to edit the Registry on one user account, then right-click the Explorer key and select Export. Export the file to the root of your C drive so that it's accessible to every user and call it something obvious, such as 'policies'. Then log on as a different user, locate the policies.reg file and double-click it, merging its contents into the Registry when prompted.

REGISTRY CLEANERS ARE NEVER 100 PER CENT FOOLPROOF AND ALMOST ALWAYS REMOVE AN IMPORTANT ENTRY

Your second question has a simple one-word answer: yes. Choose New -> Key to create a sub-key when prompted. When we refer to sub-keys, we're merely referring to keys that exist inside another key.

Paul Townsend actually explains how to create the values you need for each application you wish to restrict in the previous paragraph. For your first application, choose Edit -> New -> String Value. Call it 1 and give it a value of the name of the program's file name (for example, iexplore.exe for Internet Explorer) to restrict access to that program. Then create another string value, but this time call it 2 and give it a value of the name of the next program you wish to restrict access to (winword.exe for *Microsoft Word*, for example), and so on and so forth. The screenshot at the top of this page reveals how this works. ■

Switch CD-burning programs

Q I wish to create, copy (to and from) and delete files/folders on CD-RW and DVD-RW discs as per your answer in **PCA143** (Deleting files from CD). I have both *Roxio Easy CD & DVD Creator 6* and *Nero Express* with *InCD*. The latter came with the new LG GSA-4160B drive unit that I have installed on my Windows XP PC. Realising they probably wouldn't sit comfortably side-by-side, I removed the *Roxio* program before installing *Nero*. The *Roxio* had been used previously on a CD drive unit achieving the desired objectives on -RW discs. I have since been able to record data onto both DVDs and CDs with *Nero*.

I'm now faced with two problems. When I wish to copy a file to a partially recorded disc – either DVD or CD – I'm barred. I'm told to seek administrative permission, even though I'm the sole user of my PC and logged on as an administrator! The second problem involves *InCD 43111*. I've failed to open this program as per the screenshot in the answer. Although the icon sits in the taskbar, right-clicking only throws up three options: About, Help and Options. The program does not open. No other icon exists elsewhere nor individual reference to the program. I have tried re-installing several times, to no effect. I think it's possible that resolving the first problem may eliminate the second problem.
Maurice W Jinks

A Switching CD-burning tools is a fine art, and it's not to be taken lightly, which is why the flowchart opposite is useful should you decide to make a switch. Maurice revealed that after some fiddling he was able to get both programs working, by installing *Nero* first and then adding *Easy CD & DVD Creator*. We wouldn't ordinarily recommend this as it might cause problems or waste system resources.

Maurice's DIY also fixed his permissions problem, although *Nero* has made a tool available that extends burning rights to all users. You can download it from **www.nero.com/en/ Nero_BurnRights.html**. As for Maurice's last query, that's part of *InCD's* design: the icon merely tells you it's running; you access its features by right-clicking your CD/DVD drive icon in My Computer.

START HERE

Q HAVE YOU ALREADY REPLACED YOUR CD-BURNING TOOL?

— YES →

A Chances are you'll encounter similar problems to those described by Maurice. Do a Google search for your symptoms, visit the support section of your software manufacturer's Web site, or check out **http://support.microsoft. com/kb/314060** if the drive becomes inaccessible at any point.

NO

Q ARE YOU REMOVING A ROXIO PRODUCT (*EASY CD/CD & DVD/MEDIA CREATOR*) FROM YOUR SYSTEM?

— YES →

Q ARE YOU REMOVING THE LATEST VERSION – *EASY MEDIA CREATOR 7* – FROM YOUR PC?

YES ↓

A You should be able to remove the program safely using the Add or Remove Programs Control Panel. For more troubleshooting tips, visit **www.roxio.com/ en/support/uk/**.

NO

Q ARE YOU REMOVING A VERSION OF *NERO* FROM YOUR SYSTEM?

YES ↓

A Uninstall the software using the clean tools found at **www.nero.com/en/ Clean_Tools.html** – either use the tool for your particular version of *Nero* or *InCD*, or use the General Clean Tool.

NO ↓

A Visit your CD/DVD burning software's home page and look for the Support section. Search for the terms 'uninstall' or 'remove' to see if there are any specific issues with removing the software from your PC. Also look in the download section for possible clean-up tools.

A Download the *RoxiZap* utility from **http://tools.roxio.com/support/tools/ roxizap.exe**. Save it to your desktop. Use the Add or Remove Programs Control Panel to uninstall your version of *Easy CD Creator* or *Easy CD & DVD Creator* in the normal way, but don't restart when prompted.

Instead, close down all other running applications and run the *RoxiZap* utility to remove all remaining traces of the software from your PC. Restart when done. Note that the software will ask if you want to remove version 4/5 from your computer, but it works with version 6, too.

END

FIVE MINUTE GUIDE

Flash your BIOS and upgrade it

Reach for your rain coat, as **Joe Cassels** provides some basic flashing advice

The BIOS is the most basic software on your PC. It's stored in a chip on your motherboard and any alterations you make to it are maintained by a small battery. If you remove the battery, the BIOS is reset to its original state. However, you can upgrade the software by flashing the BIOS. This replaces the original program with an updated version. Doing this can improve performance, iron out glitches, or provide additional features.

Motherboard makers often post improved BIOSes on their Web sites. Upgrading yours is a matter of downloading the software and then writing it to your motherboard, using a flashing program. This is often supplied by the manufacturer and it generally works at a very low level, so you may have to start your computer using a DOS boot disk before you can use it.

A word of caution, though. If you improperly flash your BIOS, or you use the wrong software, you can make your PC unusable. It's vital that you make sure that you understand the instructions for upgrading your particular BIOS and that you use the correct software. If you have any doubts at all, play it safe and stick with the version you have. Some flashing utilities enable you to back up your existing BIOS so that you can restore it in case of emergency, which minimises the risk, but doesn't eliminate the possibility that a failed upgrade could render your machine unable to boot, so exercise caution. ∎

→ STEP-BY-STEP GUIDE

Quick as a flash

Upgrading your BIOS is a matter of obtaining the right patch and following instructions carefully
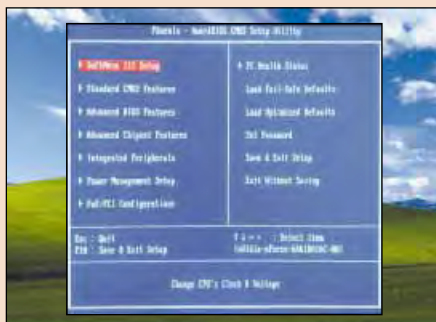
01 Start by identifying your current BIOS. Use your motherboard manual to find out its model number. Alternatively, enter the BIOS by starting your PC and pressing [Del] repeatedly to obtain information about it.

02 Head to your motherboard manufacturer's Web site. You should find BIOS updates, if available, posted on the Support or Downloads section of the site, depending on how your manufacturer organises things.

03 Browse to the entry for your motherboard. Don't be tempted to try updates for other hardware. BIOSes are specific to the kit they were created for. Download and extract the files to a temporary location.
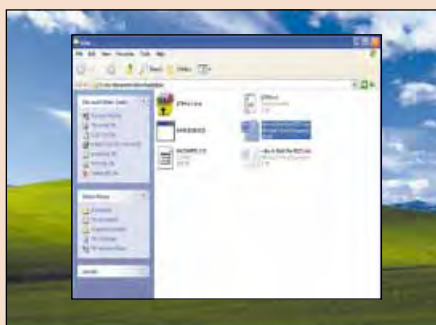
04 Find and open any Readme or instructions files. Read these carefully as the procedure for flashing the BIOS will depend on which kit you're using, although it's normally done in a DOS environment.
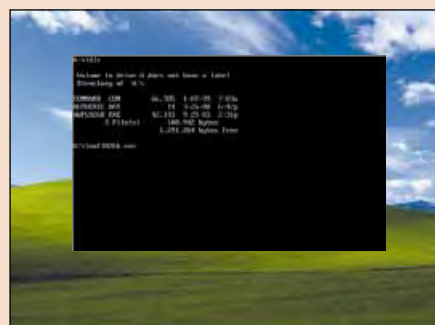
05 Start your PC using a DOS or Windows 9x boot disk. Browse to the directory holding the update files using cd c:\temp where c:\temp is the folder where you extracted the BIOS upgrade files. Launch the file.
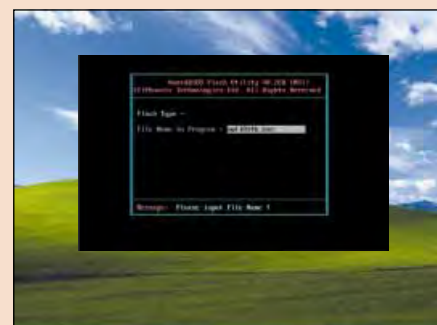
06 If the upgrade utility offers the chance to backup your old BIOS, provide a location and accept. Follow the instructions to apply the update and then restart your computer when you're done.

CLINIC

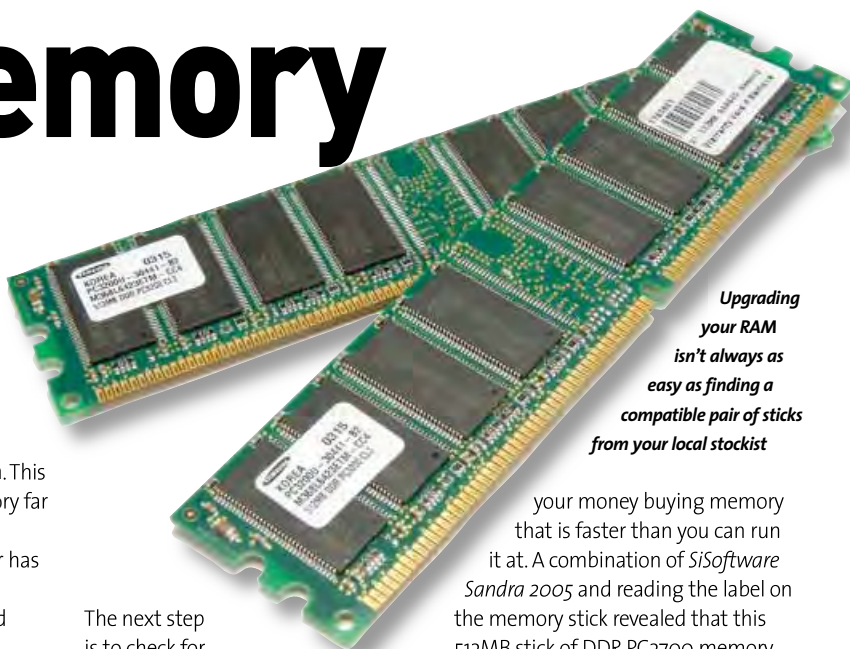## Upgrading your machine isn't always as easy as you think…

Painful memory

> **My machine has had 512MB of RAM since I bought it. I've never had a problem with memory until I made it on to the beta test team for *Matrix Online*, then I started experiencing stuttering and slow play that's commonly associated with not having enough memory. In fact, the specification for this game does recommend 1GB of RAM, so I bought two more 512MB sticks. The problem is, the old memory overrides every other memory stick I put in the machine. Any ideas what's happening here?**
> **CHRIS THOMAS**

→ THE EXPERT

ALAN DEXTER
Upgrade expert

Ah, the joys of a memory upgrade. In a perfect world, there'd only be one type of memory. It'd make upgrading easy and ensure that all motherboards work flawlessly. In reality, there are so many different types of memory out there that it's impossible to keep track of them. This can make upgrading your memory far trickier than it really should be – which is exactly what this reader has found.

Key to memory support and performance is the memory controller, as defined by the motherboard. A quick look in the PC revealed that this reader's system is built around MSI's 845PE Max2-FISR motherboard. This is an impressive motherboard, and not one that we have had experience of being particularly fussy on the memory front. This is an important factor, as there were a series of motherboards that appeared before the DDR400 standard was fully ratified that can be exceptionally critical about the type and speed of memory supported.

Even so, when having problems with memory, it can pay to update the BIOS to make sure that the problem doesn't stem from a timing or speed issue. As with many other modern, big name motherboards, MSI supports a live update system that can be configured to automatically keep an eye out for new drivers and BIOS files. This is a convenient way of keeping your PC up to date, and as the BIOS updates are applied within Windows itself, it's as seamless a system as you could wish for. Forcing it to check for the latest BIOS files did reveal a slightly newer BIOS revision, but this doesn't solve the problem that we were experiencing.

The next step is to check for physical problems with the memory modules, the slots or the way in which the memory has been installed. Nothing obvious was amiss here, and booting the PC with each memory module separately didn't single out any one as being the guilty suspect. There were no obstructions in the memory slot connectors, and the PC was well ventilated and cooled, so it isn't a heating problem either.

Find out the ins and outs of your motherboard at the manufacturer's site

One of the main factors to bear in mind when upgrading your memory is to make sure that the new memory is designed to run at the same speed and timing settings as the memory that's currently installed. This is both from a compatibility perspective and also to ensure that you don't waste

Upgrading your RAM isn't always as easy as finding a compatible pair of sticks from your local stockist

your money buying memory that is faster than you can run it at. A combination of *SiSoftware Sandra 2005* and reading the label on the memory stick revealed that this 512MB stick of DDR PC2700 memory has a CL rating of 2.5 and that it was manufactured by Samsung. The newer sticks, bought from Kingston technologies, were similarly rated and supported the CL 2.5 setting at DDR333 speeds (essentially identical).

Motherboard limits
Running out of ideas, we tried the memory on another PC. Individually the memory sticks worked fine. It was when the memory sticks were used together that the situation became intriguing: the test PC could see all three sticks, giving a total memory of 1.5GB. Thinking that there was a problem with the motherboard itself, we decided to investigate the problem a little further, eventually ending up at the MSI Web site looking at the details for this particular motherboard. It transpired that the problems we were experiencing were down to the limits of the memory controller used by this motherboard. Take a look at the box-out for more information on this.

Discovering why the motherboard won't see the full complement of memory is a result of sorts, although we still felt that we failed our reader, or rather technology had. Thankfully, this problem was a mere curiosity for the reader, as the performance improvement going up to 1GB of RAM

A guide to upgrading your memory

The ideal way to upgrade your memory avoiding most of the pitfalls
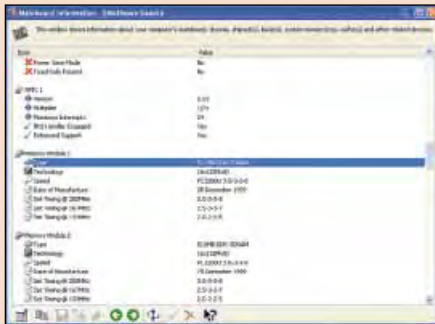
01 Start by using a system information utility such as *SiSoftware Sandra* or *Everest* to detect the memory that's already in your machine and to see how quickly it's running.

02 You probably don't have enough information from this alone, so open up your case and check a stick of memory that's currently installed to discover its speed and timing settings.

03 While you're in your machine, make sure that there are enough empty slots to make such an upgrade simple. If there aren't enough free slots, then you'll have to replace your existing memory.

04 Check the motherboard model number while you're inside your PC – you should find a label on the motherboard somewhere. Use a search engine to track down more info on the motherboard.

05 Check the motherboard manufacturer's Web site for details about its memory capabilities, including how many banks of memory it supports. You may find you need a complete memory overhaul.

06 Installing the memory is fairly straightforward: just line up the notch and push the memory firmly into place. All being well, you should find that you've increased the memory after rebooting...

---

had resolved all of his problems anyway, and he had another PC that would quite happily take the memory upgrade. Of course, he also has the option of swapping out his 512MB sticks and replacing them with two 1GB modules to take the memory subsystem up to its 2GB limit. In theory, using three single-sided 512MB modules could produce the 1.5GB limit, but in reality such modules don't exist.

There's another alternative of course, and that's to upgrade the motherboard to a more recent model that has a different memory controller. Not only would this give the reader access to his full complement of RAM, but a more modern chipset would also support dual-channel memory operation, which would improve memory performance greatly. Either way, upgrading your memory isn't quite as simple as it should be... ■

→ FURTHER INFORMATION

MEMORY LIMITS

Here's proof that you can't find out too much about your motherboard

There's a link on the MSI Web site that lists all of the memory types that are compatible with this particularly motherboard. If you tend to err on the side of caution when performing a system upgrade, then making sure that you select memory that's on the list certainly won't cause any problems – providing that the memory that's in the PC is also on the list. Such recommendations are little more than a marketing gimmick, but can yield some useful snippets of information.

The list revealed that Samsung isn't a recommended brand. This isn't anything to be concerned about on its own, however, as Intel's 845PE chipset is well supported. That, and the fact that the Samsung memory has been used in the PC without fault since being built, and still works fine with the original memory stick in place. There's a reference on the Web site to the fact that the memory bus can only be run at 333MHz if used in conjunction with a processor that has an FSB of 333MHz – which our reader does have.

Clinking the Buffalo link on the memory manufacturer list did solve our reader's quandary. On selecting the make and model of the motherboard, the product finder revealed that the 'This motherboard only supports four banks of memory. If double-sided DIMMs are used the third socket is disabled.'

All of the memory sticks being used are double-sided, dual-bank DIMMs, meaning that the most this PC will ever see with this memory configuration is 1GB. This solved the issue with the memory working fine individually, although it does leave our reader with a spare stick of memory.

PCANSWERS PRESENTS...

Hardware helpdesk

All of your hardware problems solved by the **PCAnswers** experts

KEYBOARDS
FUNCTION KEYS

Q **I have a Microsoft wireless multimedia keyboard and have a problem with it. On boot up it defaults to F Lock being off, which makes it awkward for accessing safe mode. Is there a way to set it to start up with F Lock on by default? The problem is also affecting the [Print Screen] button, which is disabled whenever F Lock is on.**
Simon Winters

A If you head over to **www.mvps.org/jtsang/flock-e.html** you'll find a variety of tools created by Microsoft MVP, Jason Tsang. Each

download comprises a couple of Registry files that you can use to update how your keyboard works.

The main *F Lock Key Eliminator* download will enable you to use the [F1] to [F12] keys as standard function keys regardless of whether F Lock is on or off. There are also two additional tools that can permanently switch on the [Insert] and [Print Screen] keys which are often affected by the F Lock key. As the site points out, you need to bear in mind that a restart will be required for the changes to take effect,

Function keys on enhanced keyboards can be useful, but if they annoy you, it's easy to disable them

and that your keyboard must be plugged into the PS/2 port on your computer. If you have a USB keyboard, you'll probably find that you were supplied with a USB-to-PS/2 converter which you can use.

NETWORKING
INTERNET CONNECTION SHARING

Q **I have an NTLworld broadband box with a USB plug to my PC. I now have a Netgear WGT624 wireless firewall router – but this only has an Ethernet socket. How do I plug USB into an Ethernet socket? I assume there's an adaptor of some sort, but having tried all sorts of sources I'm getting very frustrated.**
Andrew Cameron-Tillett

A Sorry to be the bearers of bad news, Andrew, but it's not possible to do what you ask. You would need an Ethernet modem if you wanted to connect it directly to the uplink port of your router. With your current set up, you can still enable more than one computer to access the Internet by

Windows XP makes it easy to share your Internet connection with other computers and you can be guided through the entire process

networking together and then using Windows Internet Connection Sharing wizard to permit other systems to connect to the Internet through the computer with the modem attached. The downside of this is that the computer with the modem must be switched on for the other machine to go online.

Your other option is to ditch the USB modem in favour of an Ethernet modem that you can connect to your router, making it accessible to all computers on the network. Alternatively, you could sell both your devices and buy a combined ADSL modem/router. There are a number of devices for you to choose from, with manufacturers such as Linksys, Netgear and D-Link offering solutions for under £60 – check out **www.dabs.com** for competitive prices. Don't forget that if you don't necessarily need the latest piece of hardware, as you may be able to grab yourself a bargain on eBay.

Use the Crucial Memory Advisor to ensure you buy the correct type of memory for your PC

Converting a partition to NTFS requires unrestricted access to the drive

MEMORY
UPGRADING RAM

Q **At the moment I have 512MB of memory in my computer. Can I put another 512MB stick in the next slot and increase the capacity of my computer to 1,024MB? If the answer is yes, does it have to be the same make of memory?**
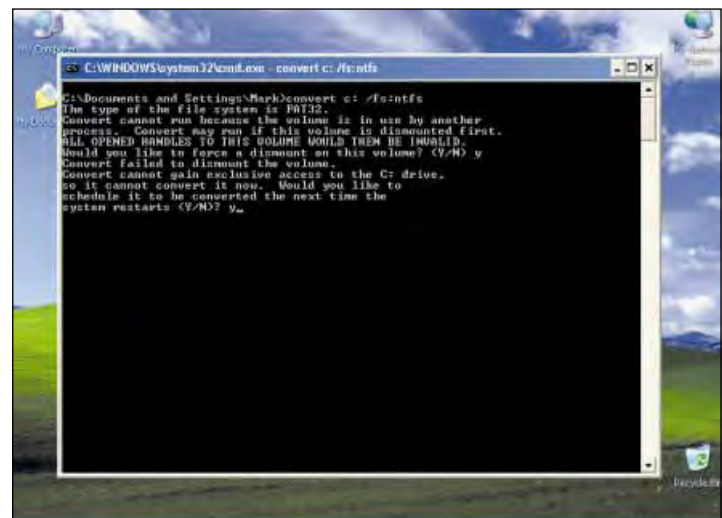**Arthur Bassett**

A In all probability, you'll be able to install the additional RAM your want, but you'll need to check a couple of things. First, ensure that you have a free memory slot on your motherboard, and also check to see if you need to install memory in matching pairs or not. You should be able to find this information in your motherboard manual. Now head over to the Crucial Web site (**www.crucial. com/uk**) and you can use the MemoryAdvisor tool to find out which type of RAM you need to buy for your system.

HARD DRIVES
PARTITION AND DUAL BOOT

Q **Following a reformat of my 120GB hard drive I decided to use** *Partition Magic 8* **and organise a dual Operating System. I've managed to do this, but have hit upon a few problems. I'm using XP Home on the main primary partition showing 102GB and Windows 98 on a hidden partition showing 12GB: I've lost 6GB somewhere. The BIOS still shows 120GB. On the Windows 98 partition I find that I only have 16-colour graphics, which is virtually useless. This situation cancels out most advantages of running Windows 98.**
John Lewis

A The quoted size of a hard drive and the size you see when you look at its properties in Windows are nearly always different. This is because of the different ways in hard drive manufacturers and Windows calculate the size of a megabyte. Manufacturers like to make their drives seem as large as possible by defining a megabyte as 1,000 kilobytes. Windows, on the other hand, defines it as 1,024 kilobytes, hence the discrepancy.

It's also worth bearing in mind that the size quoted for a hard drive refers to its unformatted size. When you format it some space will be lost. As for your problem with graphics in Windows 98, it's hard to give any precise help without

Understand key hardware terms and concepts
KVM switches

BEGINNER'S BIBLE

As computers have dropped in price so dramatically over recent years, increasing numbers of people own more than one machine. Just because you've bought a new computer, it doesn't mean that your old machine need be consigned to the tip – it's likely that it still serves some purpose. Many PC users have been tempted by the sleek lines of the Mac mini, but the idea of giving up more desktop space to another machine (albeit a very small amount of space) puts some potential buyers off. Add to the equation a second monitor for your additional PC and you may find that you just don't have the space. However, multi-computer setups can be very useful, particularly if you're a Web designer and want to check the look of your site on different systems. A solution comes in the form of KVM switches (keyboard, video and mouse).

Looking much like a USB hub, these devices enable you to connect a single monitor, keyboard and mouse to two or more computers. For many people a two-port device should be sufficient, but it's also possible to buy four-, eight- or even 16-port models. KVM switches come in two types – USB and PS/2 – so make sure you pick the right device for the equipment you're using. Some switches don't come with the required cabling, so check before you splash out on

what appears to be a bargain. You also have the option of buying a switch with integrated cabling, and they all work in the same way.

Plug your keyboard, monitor and mouse into the front of the switch and use the cabling to connect the switch to the USB/ PS/2 ports and graphics card of your two machines. A button on the front of the switch enables you to choose which computer you want to work with. Check out the Belkin Web site (**www.belkin.com**) for a number of of solutions.

Use two computers with a single keyboard, mouse and monitor, saving on desk space

Do you run into similar problems as those seen in these pages and find different solutions? Let us know and we can share our expertise.

Reader's tips

USB hubs

After having a few problems finding a USB hub that worked for me, I thought I'd share my experiences with other **PCAnswers** readers. My computer had four USB ports and no free slots to add more so I decided to invest in a two-port USB hub.

I attached my scanner and printer to the hub only to discover that they didn't work. Initially, I though the hub was faulty, but I tested it by plugging in my card reader and it worked fine. A friend suggested to me that insufficient power was being pumped out by the hub and suggested that I tried a powered hub. Sure enough, having bought a four-port powered hub, I could connect everything I wanted and it worked fine. So if anyone else has had similar problems it may be that the cheap, basic hub that you thought was a bargain simply isn't up to the job.

Powered USB hubs can cope with more attached devices than their unpowered counterparts

further details of your system, but in all likelihood you just need to download an updated driver for your graphics card.

DRIVERS
EPSON SCANNER DRIVER

Q **I have an Epson GT-7000 scanner that I'm having trouble finding a driver for. I'm running Windows XP but I can't track down a driver for this scanner that is designed for Windows XP on the Epson Web site.**
Lyn Fishwick

A As is often the case, when you can't find an XP specific driver for a piece of hardware, you should find that the driver designed for Windows 2000 works fine. In fact, this is the advice given on the Epson Web site. Pay a visit to **www.epson.co.uk** and navigate to the pages about your scanner by selecting Scanner from the menu in the right-hand Support column followed by the model number. In

the Hot Topics box to the upper-right of the page, you should see a question about what to so if you've upgraded to XP. Click this and you'll be told to use the Windows 2000 driver. Download and install this and everything should run smoothly, although you may well see a driver signing or compatibility message during installation.

STORAGE DEVICES
ZIP DRIVES

Q **I recently added a new motherboard to my PC and ever since my internal Iomega Zip 250 has been playing up. If I start the PC with the drive empty, I see an error message informing me to insert a disk. If the PC is started with a Zip disk in, everything starts as normal, but the Zip drive is labelled as drive C: and my Windows partition is detected as drive E: What's going on? I'm using Windows XP Home Edition.**
Sam Foster

A Zip drives need to be controlled solely by their own drivers, but many motherboards attempt to add support through the BIOS. The first thing you need to try is entering the BIOS and selecting the Disable option for your Zip drive. You may find that you then have to reinstall the drivers for it to work properly.

As for your problem with drive letters, if it was a partition other than the one you've installed Windows to you could use Disk Management to choose a new letter (Start -> Run -> diskmgmt.msc). However, Windows won't enable you to change the letter assigned to the system partition as it is in use. See **www.petri.co.il/change_system_drive_letter_in_windows_xp.htm**. The alternative is to reinstall Windows that will enable your hard drive to be configured correctly.

SAFE MODE
CD BURNING SUPPORT

Q **My PC is suffering from several serious problems to the extent that I have decided to bite the bullet and perform a full reinstall. The problems are such that I can only get the machine to start in Safe mode. I'm not very well prepared for a reinstallation of Windows as I haven't backed up any of my files. CD burning doesn't work in Safe mode so how can I safeguard my important files?**
Ted Malcolm

A The easiest option would be to invest in a USB thumb drive. These can be picked up very cheaply from the likes of Dabs (**www.dabs.com**). For under £30 you could buy a 512MB drive from Kingston. Copy your data on to this drive to back it up. If 512MB doesn't provide you with enough storage space, you could invest in a larger drive, or simply transfer the files to another computer to burn on to DVD.

USB drives are a great way to transfer large amounts of data from one computer to another
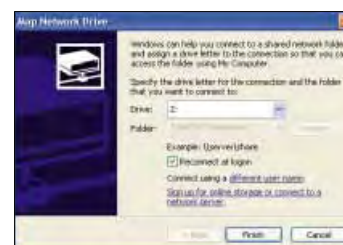
REMOVABLE MEDIA
USB DRIVE

Q **Recently, my USB thumb drive has stopped working properly. When I plug it into a USB port, Windows XP makes a sound which seems to indicate that it has been recognised and a 'safely remove hardware' icon is shown in the System tray. However the drive just doesn't appear in My Computer. If I look at the Device Manager, the drive appears and is said to be working properly. Can you help?**
Maxwell Hunter

A The most likely cause for a drive not being assigned a drive letter is that it is trying to assign itself a letter which is already in use. Your USB device will not attempt to steal drive letters from any of your hard drive partitions or CD/DVD drives, so the culprit may well be a mapped network folder. If your computer is on a network

If you've mapped a network folder to a drive letter, it may prevent removable media from being detected

and you've configured a shared folder to use a particular drive letter, try changing this to the next letter in the alphabet. You should now find that your USB drive is successfully detected.

HARD DRIVES
CONVERT TO NTFS

Q **My wife owns a Toshiba Satellite Pro Laptop with a 2GHz Pentium 4 processor that she bought from PC World a couple of years back, with Windows XP Home Edition installed. The query I have is that for some reason, it came formatted with the FAT32 file system – there has always been a folder on the desktop entitled 'Convert to NTFS'. When I double-click this folder, a window opens with what looks**
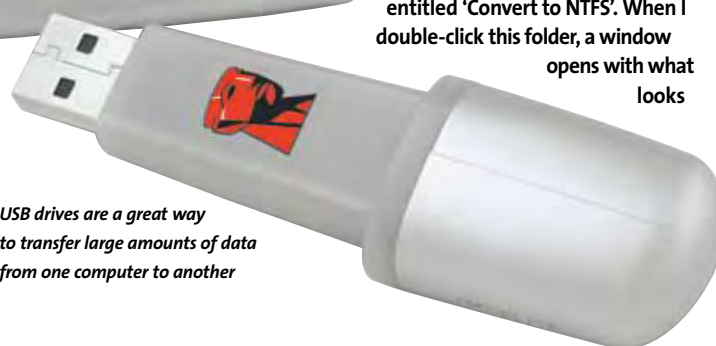
like a DOS black background with the following message:

'The type of file is FAT32. Convert cannot run because the volume is in use by another process. Convert may run if this volume is dismounted first. ALL OPENED HANDLES TO THIS VOLUME WOULD THEN BE INVALID. Would you like to force a dismount on this volume? (Y/N)'

I don't understand this terminology and it has always put me off continuing with the process. Can you explain if we're likely to encounter any operating problems after forcing a 'dismount'?
Keith Smith

A You're seeing this error message because your hard drive is in use when you're trying to convert it. This can be caused by Windows itself or a third-party program such as your anti-virus software. The offer to dismount your drive is nothing to be worried about, so when the message appears press [Y] followed by [Return]. You'll then see another error message informing you that the drive could not be dismounted because it's in use. However, you're also given the opportunity to schedule the conversion process to take place the next time you start your PC – just press [Y] again. Restart your computer and after a short wait, you drive will be converted to NTFS.

HARDWARE DETECTION
PERSISTENT PRINTER

Q Recently, I added an old Lexmark printer that I successfully installed and generally I'm happy with it. However, whenever I boot up my PC, the Add New Hardware Wizard appears telling me that a new printer has been detected. If I run through the Wizard, everything works as normal, but it's becoming very irritating. I've checked that I'm using the latest drivers but the problem persists. How do I stop this from happening?
Kelly Young

A It sounds as though your aging printer is not a plug-and-play device as this would cause the problems you're experiencing, although it can also be caused by a damaged Registry. Start by downloading the latest driver for your printer from the Lexmark Web site (**www.lexmark.co.uk**) and then launch the Registry Editor by clicking Start -> Run and typing regedit.

Navigate to HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Enum\LPTENUM, right-click the LPTENUM key and select the option to delete it. Restart your PC, run through the Add New Hardware Wizard and select the new driver you've downloaded. You should no longer be troubled by the printer being constantly detected.

CD BURNING
MISSING DRIVE

Q Having tried out *Nero* for the first time on a friend's PC, I decided it was time to switch allegiances and ditch *Easy CD Creator*.

Ever since, I have been unable to access either my CD or DVD drive.

I have searched high and low on the Internet and I can find no reference to *Nero* causing such problems. I updated the drivers and firmware for my drives shortly before switching to *Nero*, so I think I'm up to date in that department. Do you have any idea what the problem could be?
Kevin Barnes

A This is a known problem that can occur after you uninstall *Easy CD Creator*. Launch the Registry Editor by clicking Start -> Run and typing regedit before navigating to HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Class\{4D36E965-E325-11CE-BFC1-08002BE10318}. Click Edit -> Delete and confirm that you want to remove the selected key and all of its subkeys. Now uninstall *Nero*, restart your computer and reinstall the CD burning software.

HARD DRIVES
LARGE DRIVE SUPPORT

Q I have just installed a new 200GB hard drive and Windows XP Pro keeps telling me that it is only 127GB in size. What has happen to the missing 63GB? When I enter Setup on booting that tells me it is a 207GB drive. Why does Windows think that it's much smaller and how do I get around this?
George Perry

A There are a number of possible causes, and a number of possible solutions to this problem, George. Support for drives over 137GB in size

have been supported by Windows XP since Service Pack 1. You probably already have this or Service Pack 2 installed, but check to make sure and pay a visit to Windows Update if you find that you don't have them.

The next possible culprit is your motherboard. Although most recent boards feature support for large hard drives, this isn't true of all of them. Don't worry if you read your manual to discover that large drives are not supported as it should be possible for you to flash your BIOS to add such support – check the Web site of the motherboard manufacturer.

All is not lost if a BIOS update is not available. You'll still be able to access your full 200Gb, but not as a single partition. You can create an extended partition in the 'missing' 63Gb area of your hard drive using the likes of *Partition Magic* (**www.symantec.com**), but Windows XP has its own tool. Disk Management isn't much use when it comes to dividing up your hard drive, but it's sufficiently powerful for this particular task.

Launch Disk Management by clicking Start -> Run and typing diskmgmt.msc. In the window that appears you'll see a bar representing your hard drive (Disko) that's divided into two sections: the 137Gb partition you're able to access and a further section labelled as Unallocated. Right-click this section of the bar and select New Partition.

Troubled by a persistent printer installation? A quick Registry edit will get things sorted

As you want to be able to access the partition from within Windows, select the option to create an Extended partition and choose the size you want it to be – probably to fill all available free space. You'll notice that the previously unallocated space is now marked as Free Space. Right-click this and select New Logical Drive before clicking Next followed by Next.

At the screen that asks you to assign a letter to the partition, use the drop-down menu to choose a letter after those that are assigned to any CD or DVD drives you've installed. You can then choose the disk format you would like to use for the partition (NTFS is usually the best option) and assign a label. Click Next followed by Finish and a few moments later your hard drive will have been divided into two partitions.

A useful tool for enabling large hard drive support regardless of the features of your motherboard is *Big Hard Drive Enabler* from Maxtor. Go to **www.maxtor.com**, and click Worldwide Support followed by Software Downloads. In the Utility menu select *Maxtor Big Drive Enabler*.

SCANNERS
SHARING DEVICES

Q I have successfully managed to share a printer on my home network and I'd like to know if it's possible to do the same thing with my scanner. It's a bit restrictive only

being able to scan on one of my PCs that are both running Windows XP. **Angela Morton**

A Scanner sharing isn't natively supported by Windows, so you're going to have to turn to third-party software. **www.share-scanner.com** features a program called *RemoteScan*. The personal version of the program enables you to share a scanner with up to three other PCs and can be bought for $39 (around £21). This is cheaper than buying a second scanner or even an expensive network scanner.

MONITORS
DEAD PIXELS

Q As my desk was starting to become a little cramped, I decided to buy myself a 17-inch TFT monitor. In the Taskbar of Windows I can see a single red dot that I just cannot get rid of. I've updated the drivers for my graphics card – a Radeon 9600 Pro – and tried everything else I can think of to no avail. How do I banish the dot? **Simon Wilkinson**

A It sounds as though you're suffering from a dead pixel. A 17-inch flat screen monitor has a native

resolution of 1,280 x 1,024, which equates to 1,310,720 pixels. Each of these pixels is made up of three sub-pixels (one for red, one for blue and one for green), giving a grand total of 3,932,160. The incredible number of connections found in a TFT monitor means that it is not uncommon for one or more to fail, resulting in the dead pixel you're experiencing.

Unfortunately, there's nothing you can do to fix the problem. Different monitor manufacturers have different policies regarding dead pixels, so it's worth getting in touch with them to see if you can get a replacement. Realistically, as only a single pixel is affected, you're unlikely to get a replacement as a single fault is deemed to be acceptable. If you had problems with several pixels you may have more luck.

PRINTERS
PRINTER SHARING

Q I have set up a small home network that's attached to my main Windows XP machine along with an older Windows Me machine, which I use from time to time. I have a printer attached to the XP computer and I wanted to know if it was possible to access this from the Me
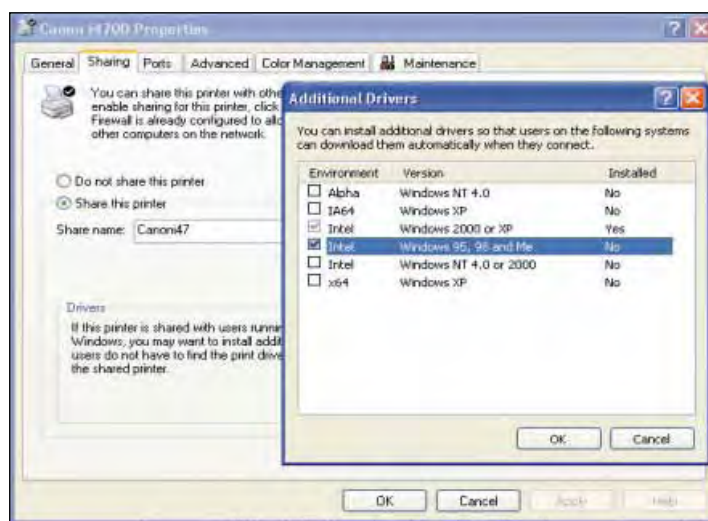
You can share your printer over your network even if your machines are using different versions of Windows

PC. While I don't use Me very often, the option to be able to print would mean that I don't have to transfer files to the other computer. **Edward Charles**

A As you already have a network in place you're halfway there. Printer sharing can be achieved in much the same way as folder sharing. On the computer running Windows XP, click Start -> Printers And Faxes, right-click your printer and select Sharing from the menu that appears. Select the option labelled Share This Printer and enter a meaningful name. As your other computer is running an older version of Windows you'll have to install different drivers so click the Additional Driver button. Make sure that you have your printer driver disc inserted and click OK.

Now turn to your Windows Me machine and click Start -> Settings -> Printers > Add Printer. Click Next and select the Network Printer option. Click Next, then Browse and navigate to your XP machine on the network.

MONITORS
CURVED DISPLAY

Q I have quite an old PC and I've just tried to increase my monitor's resolution – an old DX2-66 running Windows 98. I can get the screen to work at 1,024 x 768 but the sides of the screen are curved. Is there anything I can do? **David Hughs**

A You don't say which monitor you're using, but if you look on the front of the casing you may find controls that you can use to adjust the image. The problem is known as

barrelling and you may be able to straighten out the image using a thumb dial. Failing that, download a copy of *SciTech Display Doctor* (**ftp. scitechsoft.com/sdd/sdd653-w.exe**). This is a very old program (some seven years old) which is now available free of charge and you can use the built-in software controls to adjust the settings of your monitor.

CARD READERS
AUTOPLAY OPTIONS

Q My PC has a built-in card reader that I use to transfer photos from my digital camera. Usually, I would insert my memory card and a window would appear asking me if I wanted to view the photos or open the folder, but this has stopped showing up. How do I get it back? I can still access the card through My Computer. **Sarah Hanting**

A As with any such hardware problem, the first thing to check is that your drivers have not been corrupted. Uninstall and reinstall, checking that you're using the latest available version. It may also be the case that your autorun settings have been changed. You can reconfigure these manually, but you may find it easily to download the *AutoPlay Repair Wizard* from Microsoft. Go to **www. microsoft.com**, click Downloads and conduct a search using 'AutoPlay' as your keyword. Run the program and you can then select which of your drives you're experiencing problems with. *RealPlayer 10* is also known to cause the problem you're experiencing. Try downloading the latest version to see if that solves things, or uninstall *RealPlayer* for the time being.

Unfortunately, dead pixels on a TFT monitor may be something you have to learn to live with

ROUTERS
SECURE SITE ACCESS

Q I recently inherited a Netgear DG824M ADSL modem and router from a friend of mine. Since installing this, I've been having trouble accessing secure Web sites – the ones that start HTTPS. What do I need to do?
Andy Rison

A Your router features a built-in firewall and it seems that the port needed for HTTPS access is currently blocked. Log into your router configuration by typing 192.168.0.1 into the address bar of your Web browser and move to the Firewall Rules section. If you see an entry for HTTPS which is marked as Block Always, edit this to Allow Always. If this entry is not visible, click the Add button and select HTTPS(TCP:443) from the drop-down menu. Set the Action to Allow Always and leave the LAN Users setting as Any before clicking Apply.

When your router has rebooted, try connecting to one of the secure sites you've been unable to access. You could also add your computer to the Demilitarized Zone (DMZ) to give it unrestricted access to the Internet. From the Firewall Rules page, tick the box labelled Default DMZ Sever and enter the IP address of your computer on the network. As this does always completely unrestricted access to the Internet, it's a good idea to have a software firewall in place.

USB PORTS
LAPTOP UPGRADE

Q My laptop (an Advent machine from a couple of years ago) only has one USB port. I have experimented with USB hubs without much success. Could you tell me if it's possible to add extra USB ports to the laptop as you can with a desktop machine?
Robert England

ActiveSync can cope with more than one device, but can only synchronise one at a time

Focus on...

Each month we look at the top current issues from a leading hardware manufacturer

Netgear
www.netgear.com/support

How do I retrieve a forgotten password for my router?

Start by checking that the default username and password aren't what you're looking for – you'll find this in your router manual, but in most cases it will be 'admin' and 'password'. If these details are not correct, you can perform a complete reset of your device, although you should first note down any settings you've changed as they will be lost. Perform a normal reboot of your router through its Web interface and then disconnect the power cable. Press and hold the reset button and reconnect the power, keeping Reset held for a further 20 seconds. After a short time, the router should reboot and its original settings will have been restored. You should now be able to log in with the default username and password.

Solve all of your router problems by paying a visit to the Netgear support pages

How do I get the best range from my wireless network?

Your wireless equipment should be placed as high as possible with as few obstacles (such as walls) in the way. If your device has an antenna, point it in the direction of your other wireless device. You could also invest in a replacement antenna. A directional antenna emits a strong signal in one direction that may help to gain the extra distance you're looking for. Don't forget that other equipment such as phones and microwaves can interfere with the signal, so keep them as far away as possible.

A With desktop systems additional ports can be easily added with a PCI card and a similar option is available to laptop users in the form of PCMCIA cards. Have a look at Mr USB (**www.mrusb.co.uk**). In the USB/ FireWire PCMCIA Cards section you'll find a number of two and four port USB cards which you can buy for around £30.

KEYBOARD
NUM LOCK STATUS

Q When I start up my computer, the Num Lock key is set to 'off'. As I regularly enter figures using the number pad I have to remember to turn it on before I start typing. I've looked in my BIOS and there appears to be no option to change the default status of this key. Is there another way I can change the setting?
David Holmes

A A quick Registry edit will get you sorted, David. Open the Registry Editor and navigate to HKEY_USERS\. DEFAULT\Control Panel\Keyboard and

If you can't change the status of your Num Lock key in the BIOS, you can do so via the Registry

locate the key named InitialKeyboardIndicators in the right-hand pane. The value of this key determines the status of the Num Lock key when Windows starts up. A value of 0 means that Num Lock is turned off, while changing it to 2 will switch it on.

HANDHELD DEVICES
ACTIVESYNC

Q I have an Ipaq Pocket PC which I have been using for some time. Following a reorganisation of my workstation I decided to plug the Ipaq into the front USB port of my computer rather than the one round the back that I was using before.

ActiveSync is no longer detecting the handheld when I plug it in.

Furthermore, I'm thinking about buying a SmartPhone which also uses ActiveSync to synchronise with *Outlook*. Will the two devices sit happily together?
Milson Jones

A With regard to your first problem, Windows is currently configured to look for your Ipaq on it original USB port. Simply uninstall the drivers, plug it into the port you want to use and reinstall when it's detected.

As for your SmartPhone dilemma, there's no reason why you can't sync to devices with the same computer. However, only one device can be synchronised at any one time. If you plug in your Ipaq, it will be automatically updated. If you then want to sync your phone, you'll need to unplug the Ipaq first. Plugging both devices in at the same time will result in the first device being synchronised and the second one just charged.

Online
Hardware Help

Top resources on the Web for helping you solve your hardware problems

SOFTWARE TIPS & TRICKS
www.softwaretipsandtricks.com

Despite the name of this site, it features an active hardware forum where you can discuss problems and get help from other visitors. The Hardware Customization forum is the place to go if you want help boosting performance or modding your system.

COMPUTING.NET
www.computing.net

The site may not be much of a looker, but its forums are an excellent source of help. As well as the General Hardware forum, there are also boards dedicated to networking problems, overclocking, handhelds and more.

TOM'S HARDWARE GUIDE
www.tomshardware.com

A great resource for getting quick answers to hardware problems. As well as providing detailed help covering every conceivable type of hardware, there's also hardware news, reviews and more useful content.

HARDWARE FORUMS
www.hardwareforums.com

Whether you have a specific problem with a piece of hardware or you're just looking for some general advice, the Hardware Forums site is an active community of helpful computer users who will be able to point you in the right direction.
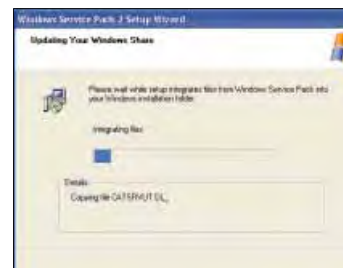
RAID CONTROLLER
SLIPSTREAMING DRIVERS

Q **Formatting my hard drive and reinstalling Windows XP is a frequent practice of mine. As a result of the type of work I do, I find that it makes sense to start afresh from time to time, and to speed up the process I have create a CD which slipstreams the standard Windows XP files with Service Pack 2.**

A friend of mine told me that it's also possible to slipstream RAID drivers on to the same disc but I have been unable to find out how to go about this. Could you shed any light on the situation? It would save me a great deal of time.
Margaret Jones

By slipstreaming drivers with your XP CD, you can speed up the reinstallation process

A You can indeed create a second slipstreamed disc that includes drivers as well as Service Pack 2. Start by downloading the full version of SP2 (all 270Mb of it). Just search for 'Service Pack 2' in the Downloads section of **www.microsoft.com** and click the link labelled Windows XP Service Pack 2 for IT Professionals and Developers.

When the download is complete, copy the file to the root of your C: drive. You'll also need to download the latest drivers for your

prompt and press [Return]. You'll now have to wait a short time while your XP installation files are updated. When a message appears to inform you that the integration is complete, click OK and close the Command Prompt window.

Open up My Computer and navigate to C:\xp. Within this folder, create another folder called OEM. Open this folder and create another called $1, create a folder within $1 called drivers and one within drivers called raid – you should end up with a series of folders taking the form c:\xp\$OEM$\$1\drivers\raid. Copy the Windows XP drivers for your RAID controller to this folder. Among these files you should find one with a .sys extension – copy this to c:\xp\i386.

Back in c:\xp\$OEM$\$1\drivers\raid open the .inf file associated with

YOU CAN CREATE A SECOND SLIPSTREAMED DISC THAT INCLUDES DRIVERS AS WELL AS SERVICE PACK 2

RAID controller. Create a new folder in the root of your C: drive called 'sp2' and another one called 'xp', and then copy the contents of your Windows XP installation CD to the 'xp' folder. You now need to extract the contents of the Service Pack 2 file you downloaded to the 'sp2' folder.

To do this, open a Command Prompt window by clicking Start -> All Programs -> Accessories -> Command Prompt. Switch to the root of C: by typing 'cd\' and pressing [Return]. Now type 'WindowsXP-KB835935-SP2-ENU.exe -x' (adjust the name of the file if you've renamed the download to something shorter), and you'll be prompted to enter a location – navigate to C:\sp2 and press [Return].

When the extraction process is complete, type 'c:\sp2\i386\update\update /s:c:\xp' at the command

your RAID controller and look for a line that starts with PCI\VEN. Highlight the text from PCI up to, but not including, the full stop and copy it to the clipboard. Now use Notepad to open the file c:\xp\i386\TXTSETUP.SIF, scroll down to the [HardwareIds Database] section and paste the text you've just copied onto a new line. Type a space, = sign, space and enter the name of the driver (minus the .sys extension) in quotes.

Locate the [SourceDisksFiles] section in the same file and type drivername.sys = 1,,,,,_x,4,1 on a new line, replacing drivername.sys with the real name of your driver file. Find the [SCSI.Load] section of the file and add the line drivername = drivername.sys,4 remembering to use the actual name of the driver file. Finally, in the [SCSI] section add the line drivername = "My RAID

Controller" before closing and saving the file. Now use notepad to create a file called WINNT.SIF in c:\xp\i386. Adding the following lines of code to the file:

```
[Data]
AutoPartition=0
MsDosInitiated="0"
UnattendedInstall="Yes"

[Unattended]
UnattendMode=ProvideDefault
OemPreinstall=Yes
OemSkipEula=Yes
NoWaitAfterTextMode=1
NoWaitAfterGUIMode=1

WaitForReboot="No"
TargetPath=\WINDOWS
DriverSigningPolicy=Ignore
OemPnPDriversPath=drivers\raid

[GuiUnattended]
OEMSkipWelcome = 1

[UserData]
ProductKey=
FullName=""
OrgName=""
```
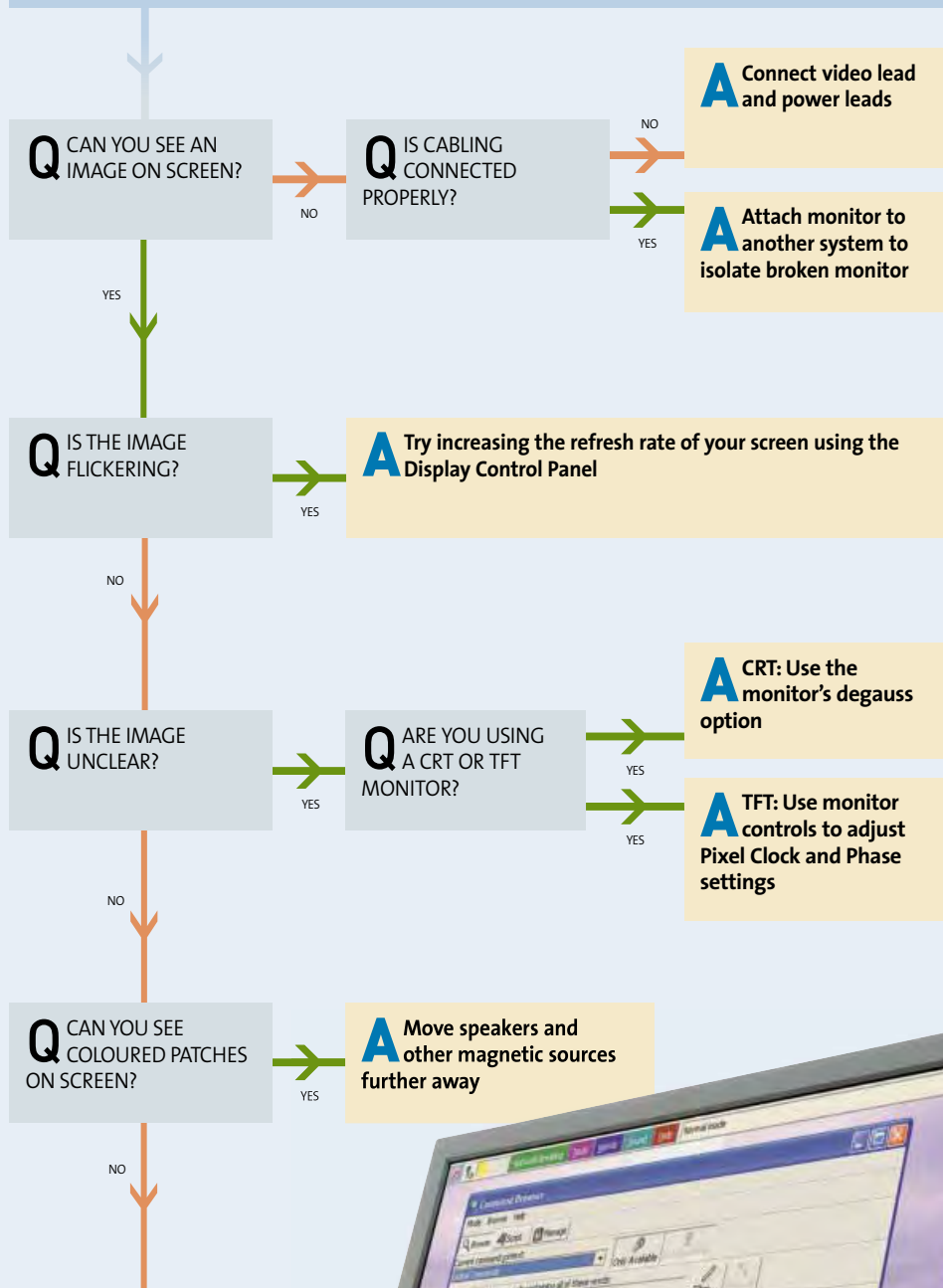
You can fill in any of the blank fields, such as ProductKey and FullName to automate the installation process.

Download and install *IsoBuster* from **www.smart-projects.net** and launch it with your original XP CD inserted. Click the Bootable CD entry in the list to the left and right-click the .img file you can see to the right. Select the Extract option and select c:\ xp as the destination folder. You can then use your preferred CD burning software to create a bootable CD, pointing your chosen program in the direction of the extracted .img file and your c:\xp folder. ■

Image reprinted with permission from ViewSonic Corporation

TROUBLE-SHOOTING MONITOR PROBLEMS

Q CAN YOU SEE AN IMAGE ON SCREEN?

Q IS CABLING CONNECTED PROPERLY?

NO

A Connect video lead and power leads

YES

A Attach monitor to another system to isolate broken monitor

NO

YES

Q IS THE IMAGE FLICKERING?

YES

A Try increasing the refresh rate of your screen using the Display Control Panel

NO

Q IS THE IMAGE UNCLEAR?

YES

Q ARE YOU USING A CRT OR TFT MONITOR?

YES

A CRT: Use the monitor's degauss option

YES

A TFT: Use monitor controls to adjust Pixel Clock and Phase settings

NO

Q CAN YOU SEE COLOURED PATCHES ON SCREEN?

YES

A Move speakers and other magnetic sources further away

NO

A Many other graphics based problems can be solved by ensuring that you have the latest driver for your graphics card. Pay a visit to the manufacturer's Web site for any new downloads.

HOW IT WORKS

How CPUs work

It's probably the most expensive, hard-working part of your PC, but do you know how your CPU works its magic? **Mike Williams** takes a closer look

Of all the hardware we've covered in this section, CPUs perhaps seem the most complicated and mysterious. It's really not surprising as they do so much, but oddly enough the reality is entirely different. The principles behind every processor really couldn't be much simpler, and it's all down to the transistor.

Think of the transistor as an electronic device with three wires. Apply a voltage to one and current flows between the others. Turn the voltage off and the flow stops, making the transistor a simple switch. One transistor isn't much use on its own, so next you connect them together to form logic gates. These take voltages on two wires and output another voltage depending on the relationship between them. For instance, an XOR Gate (XOR = Exclusive Or) will output a voltage if one of the inputs (but not both) has a voltage. Does this sounds irrelevant to you?

Well, imagine the voltage represents a binary number: on is 1, off is 0. Now think about what's happening with our XOR gate. No inputs, 0 + 0, produces 0 as a result. One input (0 + 1 or 1 + 0) gives us 1 as a result, while two inputs (1 + 1) produces 0. Have you spotted the pattern? This single logic gate is adding together two binary digits, and giving us the right-most digit of the answer.

IF A CPU CAN'T BE MADE PHYSICALLY FASTER, THEN THERE'S ALWAYS THE OPTION TO MAKE IT SMARTER INSTEAD

Combine more gates together and we could obtain the full answer (1 + 1 = 10 in binary). Arrange them in different ways and you can produce gates that perform multiplication, or other handy math tasks. At heart that's really all any AMD or Intel CPU is doing. They combine so many transistors together (now over 230 million) that the processor becomes very powerful, but it's still all based around these very basic ideas.

Architecture basics

Jump up a level from transistors and you still have many similarities between processors. You'll always find a set of registers, for instance: small chunks of memory used to store the results of operations. Registers such as the Program Counter may also point to addresses in memory, informing the CPU which program instruction to execute next.

There are several steps involved in running that, of course. It has to go through a fetch stage to retrieve it from memory, a decode stage where the CPU figures out what to do with it and an execution stage where the instruction is actually carried out. Specialised areas of the processor are dedicated to performing each task, and a clock is used to keep everything synchronised.

The instructions themselves represent the lowest possible level of programming – very simple commands that perform basic operations on your data: multiply this figure with that one, add two values together and so on.

The group of commands that can be used within a CPU is called the instruction set, and the most popular around is x86, as used in Intel and AMD processors.

An instruction set can't change without breaking the programs that rely on it, but that hasn't stopped new instruction sets appearing. Intel have given us MMX and SSE3, for instance, claiming these new ways of handling instructions would boost performance. AMD fought back with 3DNow!, and of course both companies now have their own 64-bit instruction set.

These extra capabilities are fine, but keep in mind that you'll only see any benefit from programs that are written to use them. It doesn't matter how great Intel's SSE3 instructions are: if an application uses regular x86 instructions instead, then it'll see no advantage from them at all.
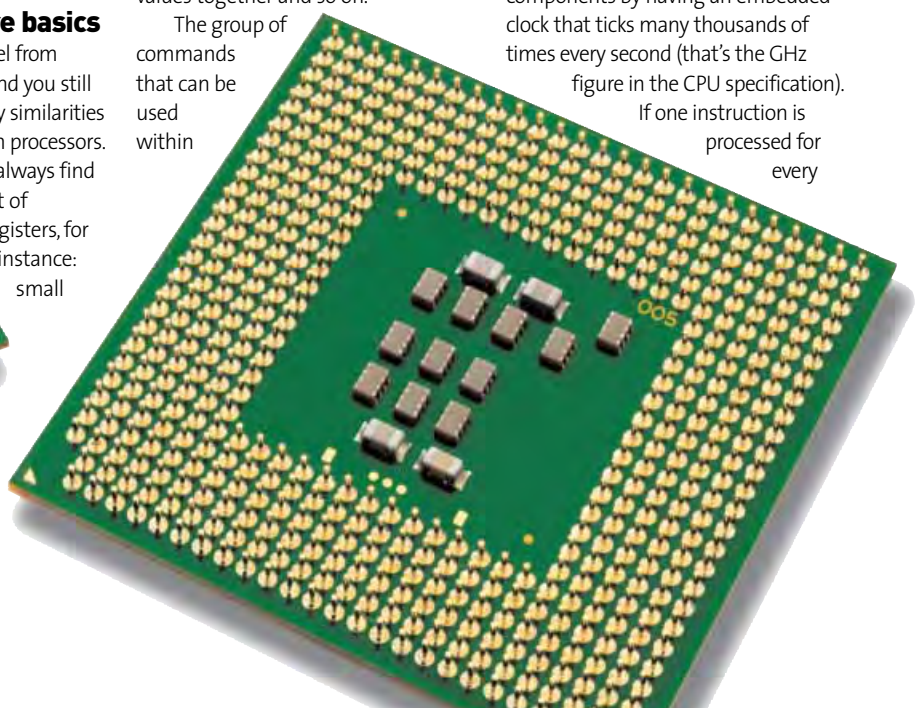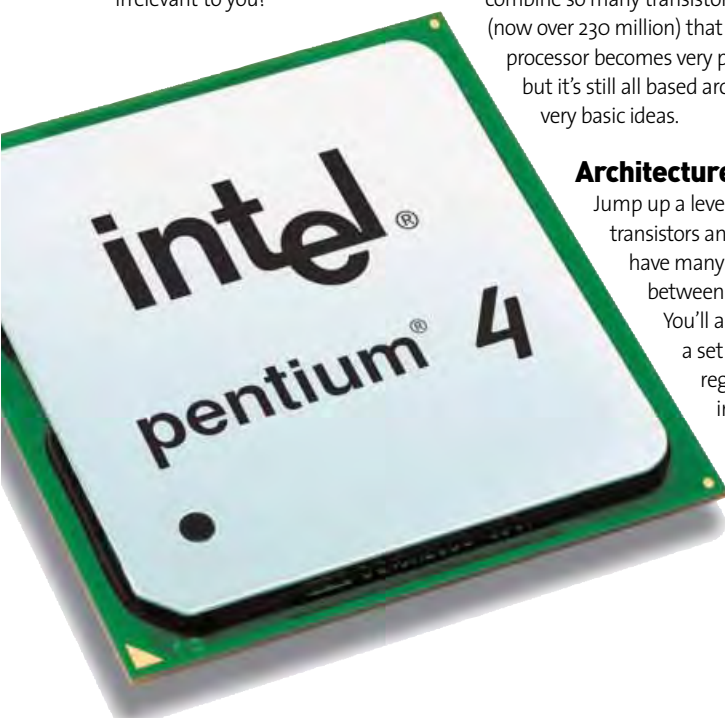
(Over)clocking

Performance is the key to a successful processor – there's no secret in that. So if proprietary instruction sets won't do the trick, what else can Intel or AMD try? One popular trick is to increase the clock rate. As we mentioned earlier, every CPU synchronises its various components by having an embedded clock that ticks many thousands of times every second (that's the GHz figure in the CPU specification). If one instruction is processed for every

clock tick, then increasing the clock rate will improve performance. It's simple mathematics.

This works up to a point, which is why overclocking produces a speed boost. The problem comes when the clock rate is so high that your CPU transistors can't switch quickly enough. This results in the PC locking up, rebooting or failing in some other spectacular way.

Intel and AMD can try to improve switching speed by shrinking the size of their CPU transistors, and they've had some spectacular results. Current Pentiums are manufactured using a 90-nanometre process technology, which means that each transistor is 90-billionths of a metre in size, and next year's processor (Cedar Mill) cuts this to 65nm. Such tiny components are more prone to leak their electrical charge, though, which along with a faster clock rate all generates a lot of heat. We're pushing the limits of what

THESE EXTRA CAPABILITIES ARE FINE, BUT YOU'LL ONLY SEE ANY BENEFIT FROM PROGRAMS WRITTEN TO USE THEM

silicon can do, which means Intel and AMD must turn to another speed trick.

Pipelining

If a CPU can't be made physically faster, then there's always the option to make it smarter, instead. Let's take a simple CPU operating sequence as an example. The clock ticks, we fetch an instruction from memory; it clicks again, we decode it; one further click, the instruction is executed; another, the data is stored, then we start again with the next instruction. Easy enough, but there's room for improvement. As each operation is carried out by a different part of the CPU, why not have them operate in

parallel? If we do, the sequence now runs like this.

Clock tick one:
Fetch our first instruction.
Clock tick two:
Decode instruction one, whilst fetching instruction two.
Clock tick three:
Execute instruction one, decode instruction two and fetch instruction three, all at the same time.

By changing our CPU architecture we've constructed a simple pipeline, carrying out four times the work per clock tick... or have we?

The problem is that programs aren't a linear sequence of instructions. They'll also jump between locations in memory, so it's not always possible to know what the next instruction will be. CPUs include branch prediction units to try and figure this out, but occasionally they

fail, and when they do it means you've spent time fetching and decoding an instruction that isn't used. Add the time required to empty the pipeline (called flushing) and much of your performance boost is lost.

What's the end result? Pipelines with many steps can improve performance, but not with every type of software. That's one reason why deep pipelines on the Pentium 4 do well at relatively linear tasks such as media encoding, but the simpler Athlon 64 pipelines perform better in more general tasks. Even with CPUs, it's sometimes possible to have too much of a good thing. ■

Jargon buster

Decode the CPU small print with our guide

64-bit
A 64-bit CPU like the Athlon 64 includes 64-bit registers, and a 64-bit instruction set. The wider registers that means it can handle more data in one go, although this doesn't offer the benefits you'd expect (Pentiums already have specialised 128-bit registers available). They can address more memory, though, so in time we'll have PCs that can handle tens of gigabytes of RAM.

Cool 'n' Quiet
An AMD Athlon 64 technology that enables your CPU clock speed and voltage to be dynamically adjusted, reducing them when your PC is idle to cut temperature and power consumption.

EMT64
The name given to Intel's 64-bit extensions, available on the Pentium 4 500 Series and later. You'll need these (or a 64-bit Athlon) if you want to run 64-bit Windows.

Data Execution Prevention, in Windows XP SP2 (System -> Advanced -> Performance Settings) can help block viruses and Trojans. But how does it work? (See NX Bit)

Execution Trace Cache
Memory on the CPU that stores decoded instructions in the order in which they were executed. This makes for an efficient use of RAM, cuts one component out of the pipeline (the decoder), and getting instructions from here is much quicker than re-fetching them from system memory.

Local Cache
Fetching instructions from system memory is relatively slow, so CPUs also include on-board RAM. This stores commonly used instructions, and runs at the full speed of the processor. The more local cache you have, the faster a CPU will run.

NX Bit
A new feature built into AMD Opterons, Athlon 64s and the latest Pentiums, the NX bit enables areas of memory to be marked by the processor as 'non-executable'. This useful security option will make it much more difficult for malignant programs to insert and execute code without your knowledge, for example through buffer overflows.

SpeedStep
Intel's answer to Cool 'n' Quiet (see above), dynamically tweaking your CPU clock speed and voltage. Enhanced SpeedStep on the latest Pentiums enables this to be directly controlled by Windows XP SP2.

System Bus
Data is delivered to and from your CPU over the system bus. With the latest Pentium 4 CPU running on a 1066MHz FSB system, this now delivers a bandwidth of up to 8.5GB/s.

Want to know more about chipsets? We have all the details...

Hard to port!

Port blocking is the most common 'firewall' feature of home routers. **Dan DiNicolo** wonders whether it can protect you from the big bad Internet

Your home computers are protected behind the rock-steady security of a router and its built-in firewall, right? Well, maybe, but maybe not. While most users automatically assume that their all-in-one broadband router/firewall is all the protection they need for the evils that lurk on the Internet, that's not necessarily the case. In fact, the firewall components of these devices are often not true firewalls at all, instead relying on the built-in port blocking and access control features of a technology known as Network Address Translation (NAT). This month we dig deeper into the word of NAT and port blocking, outlining how the technology works and why it may not offer the levels of security that you would need or expect to keep your Internet connection and computers fully protected.

Meet NAT

NAT has been around for a long time and is arguably the most important element of wired and wireless home broadband routers. NAT is the technology that allows you to have one public IP address and share the address among many different computers on your home network. The computers on your personal network use a private IP address (usually starting with 192.168), but to access the Internet, need to use a public address. NAT facilitates this by translating requests originating from computers with these private addresses into requests that appear to be originating from your router's public IP address. The NAT component in the router keeps track of which computer asked for what, ensuring that the reply gets back to the computer that made the request. To the Internet at large, however, all

ON THE CD

→ STEP-BY-STEP GUIDE

# Exploring router security

Take a closer look at your router's NAT and security settings

01 Don't underestimate the importance of your router's Status screen. Important details can be gathered here, including your connection status, IP address, the router's firmware version and more.

02 Look for a section on port forwarding or virtual servers. If forwarding isn't enabled, it's typically blocking incoming requests. Disable configured port forwarding rules that aren't required to boost security.
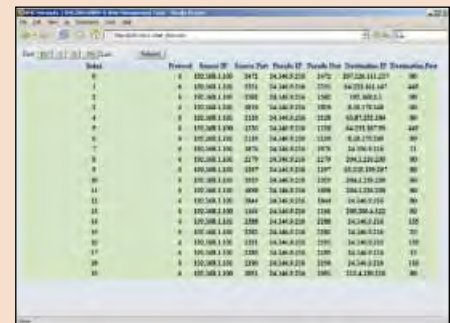
03 The NAT section on most routers enables you to view current port map settings. This displays entries in the router's NAT table, outlining which ports are being used for different sessions.

04 Access control settings enable you to allow or deny outbound access to different protocols from computers on your network. Common services are often listed to make blocking types of traffic easier.

05 Many routers include intrusion detection settings. Some include settings that enable it to ignore and drop ICMP pings on its WAN interface, thereby increasing the stealth factor of your network.

06 When you want to bypass your router's NAT functions completely and expose an internal computer to the Internet, configure it as a DMZ host. This setting should be used with caution.

requests appear to be coming from the router's public IP address.

This ability to share a single public IP address is what makes NAT so fantastic – scores or even hundreds of computers on a private network can all access the Internet using only one 'real' address. It does this by mapping different requests according to the source and destination IP addresses and port numbers being used. So, if the computer at 192.168.1.100 uses port 2345 to make a request destined for the Google Web site's IP address, port 80, NAT will map this request in a table, send the request off to the Google site using its one public IP address, then forward the reply back to the appropriate computer on the private network. Since the IP address and port number combinations used by different computers will always be unique (a computer has one IP address and only uses unique port numbers for individual requests) the NAT server can literally service hundreds of computers. There are 65,000-odd TCP and UDP port numbers accessible to each client computer, after all.

However, some of the key features of NAT are often mistakenly labelled under the title of firewall, a result of how a NAT deals with connection requests. While these features may offer enough protection for the security-conscious user, many users overestimate its security capabilities, often due to a lack of understanding about what NAT actually does.
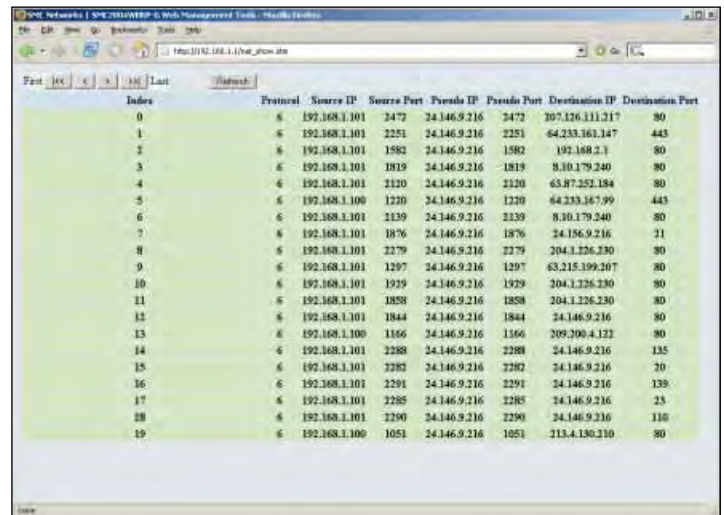
Compounding the issue is that marketing types have taken to labelling anything capable of offering any level of protection as a firewall. In reality, NAT does not inspect traffic beyond monitoring IP addresses and port numbers. A true firewall, on the other hand, inspects all traffic fully, looking for suspicious behaviour, irregularities and more. Some routers provide firewall-type inspection of certain traffic, but most rely on NAT features to handle all traffic filtering and inspection functions.

Port forwarding

Almost all NAT routers offer protection against inbound connection attempts from Internet users by implementing a technique known as port blocking. By default, your router should automatically have all inbound ports closed, blocking unsolicited connections. By unsolicited, we mean connections that do not correspond to a request that originates from within

Most home routers include a NAT Table to display details on current network translation activities

your network. For example, let's say that you fire up your Web browser and request the page **www.google. co.uk**. Your router will allow that request out and then let the corresponding reply (the Google Web page) back in. When a request

originates from the Web, however, the router's port blocking feature will stop it from entering. In other words, any user attempting to connect to your IP address (using a program such as a Web browser), will be denied.

YOUR ROUTER SHOULD AUTOMATICALLY HAVE ALL INBOUND PORTS CLOSED, BLOCKING UNSOLICITED CONNECTIONS

While a home router will block all requests originating from the Internet by default, you also have the option of unblocking certain ports via a feature known as port forwarding. This is necessary when you want to allow outside users to connect to a system on your network – common examples might include connecting to your FTP server to upload or download files, or the need to connect to your PC to offer remote assistance. If the required port-forwarding settings haven't been configured, these requests will be automatically dropped by the NAT router.

Opening ports or configuring port forwarding, requires special configuration in your router's management interface. First, you need to specify the computer on your network to which requests will be forwarded when they arrive at the router. Similarly, you'll also need to configure the correct port numbers for the requests. For example, let's say that you're running a Web server on a computer on your network that uses the private IP address 192.168.1.4. In order for Internet users to reach this server, you would need to set up a port-forwarding rule that tells the router that when it receives a request
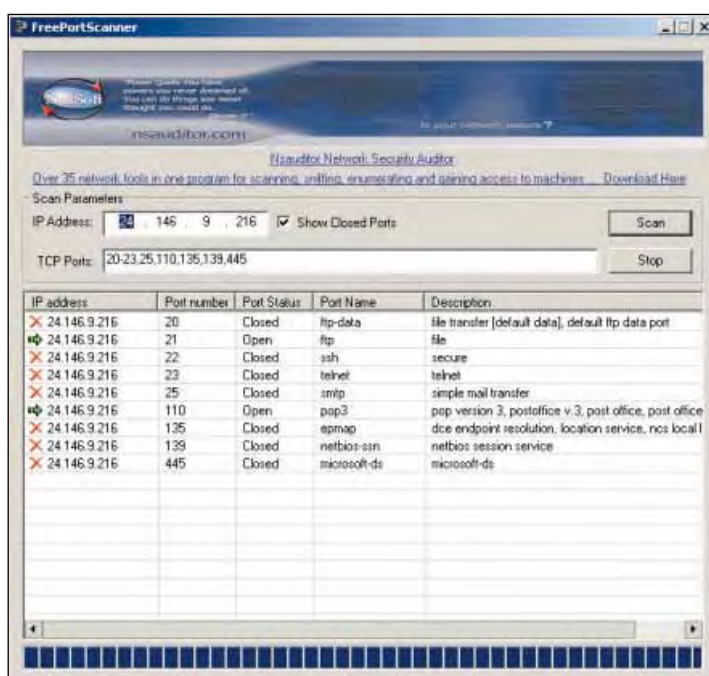
on its public interface destined for port 80, it should forward the request to port 80 on the computer at 192.168.1.4. Once such a rule is enabled, requests received by your router will be forwarded to your Web server without issue.

On some routers, enabling port forwarding is referred to as designating a 'virtual server'. When you need to allow Internet users to access a particular computer on your network, this method should be used – it limits users to accessing the service you've specified and not others.

Got stealth?

At any given point in time, ports can be in one of two main states – open (where the port accepts connections) and closed (where connections are blocked). Unfortunately, many older routers will respond to queries about the state of different ports, letting outside users know whether a port is open or closed. This isn't necessarily a bad thing in and of itself, but it does present a danger. If your router responds to these requests, then the person making the request knows that a system exists at your address. Ultimately, that means that your router is visible to the outside world, a fact that many scanning programs automatically note for future reference.

A better approach to router security is a system whereby the router functions in stealth mode. Newer routers implement port stealth techniques by default, and will not respond to queries about whether a port is open or closed. Instead, these routers remain silent, appearing invisible from the perspective of the Internet user looking for open ports or attempting to connect. There are easy

Anyone can find open ports on systems by using software like FreePortScanner

Want to test your outbound security? FireHole *is a handy free tool that helps*

ways to ensure that your router is running in stealth mode and it may be possible to add stealth capabilities to your hardware if it's not already present.

Access control

If you dig through your router's firewall configuration section, you'll likely happen upon an area (usually within the firewall configuration section) known as access control. Access control settings enable you to control which traffic leaves your network, according to IP address and protocol. For example, you can use access control settings to set up a rule dictating that the computer on your network with the IP address 192.168.1.3 can only access the Internet using the SMTP and POP3 protocols. In other

words, a user working from that computer would only have the ability to send and receive email messages, but not surf the Web.

Taken a step further, access control can give you a fairly high level of power over what types of traffic can leave your network. If you didn't want your children using a file-sharing program, for example, you could configure access control settings to disable these program's traffic at the router. The NAT service on the router is responsible for this control feature, inspecting traffic that attempts to leave your network and then allowing or disallowing it, based on the rules that you've configured.

While access control rules offer a powerful way of controlling which

traffic can leave your network, it does require that you have a fair degree of knowledge about which protocols different programs use to configure the appropriate port settings. Furthermore, you need to recognise that this technique doesn't make it possible for you to block individual programs from communicating, per se. In other words, you can't tell the router that *Yahoo! Messenger* can't be used on Mary's PC. Instead, you need to find the port numbers that *Yahoo! Messenger* uses (available from sites such as **www.iana.org**), and then configure access control settings on the router to stop that type of traffic from getting to the Internet when it originates from the IP address of Mary's system.

Testing 1-2-3

Believing that your network is securely protected is one thing, but only testing will tell you whether this is the case for certain. Thankfully, a wide range of tools exist for just this purpose and most are exceptionally easy to use.

The first and most common tool used to test the security of any firewall is a port scanner. Ironically, port scanners are usually the same tools that hackers and script kiddies are using to see whether your systems are vulnerable to attack. A port scanner's job is to scan one or more IP addresses, attempting to find the status of different ports. In cases where a port scanner finds a port

that's open (or listening) for connections, it can often be used to make a connection attempt to confirm the port's status.

Port scanners come in two main varieties – standalone Windows programs that are highly configurable, and online versions that can be accessed via your Web browser. Most of the online versions are made freely available by different security companies and individuals, enabling you to determine the status of your ports and whether your firewall is offering appropriate inbound protection. Completing such a scan will generally tell you which ports are open and perhaps require further attention, or whether your system is completely stealthy and inaccessible. For details on performing an online scan, see the steps below.

While protecting your system from inbound connection attempts is key, so too is knowing how your firewall deals with outbound connection attempts. For example, will your firewall allow any and all outbound traffic to pass, or scrutinise it more closely based on the program making the request? This test is important in the age of spyware, where one program may attempt to launch another in a bid to gain access to the Internet, forwarding any information it has collected from your PC to its server.

To test the outbound security of your firewall, we'd suggest you download a tool called *LeakTest* from
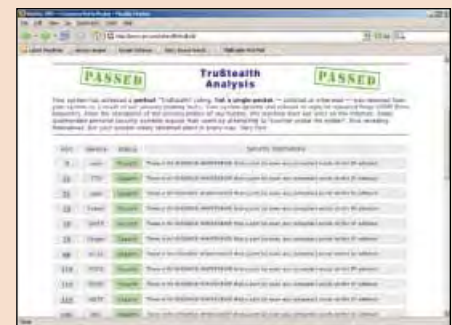
Security scan

Follow these steps to perform a port scan against your NAT router

01 There are a variety of free port scanning tools available. We suggest you scan your router using at least two of these tools. One popular scanner called *ShieldsUp!* can be found at **www.grc.com**. There's a firewall tester at **www.auditmypc.com**.

02 To scan using *ShieldsUp!*, click the link on the GRC Web site. The site will detect your router's name and IP address. Click the Proceed button, and then click the Common Ports link. This'll perform a scan of 26 common service ports.

03 If your results are listed in green, your ports are in stealth mode and not visible or seen as accessible to Net users. Do a scan for All Service Ports next, ensure your system's secure, then scan with the firewall-testing tool at **www.auditmypc.com**.

Sites like **www.auditmypc.com** *offer scanning tools to check for open and accessible ports*

http://grc.com/lt/leaktest.htm. This tool attempts to connect to the Internet from your PC to help you determine whether your firewall will block the attempt. If the program can connect to the Internet, your system could potentially be compromised by spyware or other programs that 'phone home'. If your NAT router's firewall (in its default configuration) is all the security you have in place, the program will almost certainly be able to connect to the Internet without issue. If you're also using personal firewall software, it should alert you to the fact that a new program is attempting to connect to the Internet, allowing you to deny the action. *LeakTest* is far from the only utility of this type – another great (and arguably tougher) test of firewall security is a free program called *FireHole*, available from **http://keir.net/firehole.html**.

On the other hand, port blocking does nothing to monitor or control outbound connection attempts from computers on your network. While there's no question that you control the types of traffic that leave individual PCs destined for the Internet, this may not be enough. For example, even if you only allow basic Web traffic to leave your network, it's absolutely possible that spyware programs or certain viruses could use the same ports to communicate outside of your network. Effectively, NAT routers do nothing to control which programs communicate over the Internet, meaning that it cannot differentiate between traffic destined for a Web server, for example. The request may have come from your Web browser (*Firefox*), or a spyware program – the NAT router neither knows which program made the request, or cares. In its eyes, you've

WHETHER PORT BLOCKING OFFERS ENOUGH PROTECTION DEPENDS ON HOW DILIGENT YOU ARE ABOUT PC SECURITY

Secure enough?
Whether NAT and its port blocking feature offers enough security is open to debate, but we say no. There's certainly nothing wrong with its inbound protection capabilities, especially if your router places all ports in stealth mode by default. That means that virtually any NAT router will offer sufficient protection against port scans and inbound connection attempts from Internet users – assuming that you haven't explicitly opened or forwarded any ports, of course.

given Web traffic from a certain PC a green light.

With these facts in mind, whether port blocking offers enough protection largely depends on how diligent you are about PC security overall. Understanding that the outbound protection is largely lacking, you need to be certain that your systems are not infected by spyware, viruses, and other malicious threats. With perfectly 'clean' computers, you should be fine. However, it only takes a single infection to put your system at risk. With that in mind, you might

Defence in depth

Port blocking is a great start, but a layered approach offers a better defence

Port blocking is an effective technique towards securing your network from unwanted connection attempts, but it only addresses half the story when it comes to system security. It's also important to keep tabs on any traffic leaving your PC that's destined for the Internet. This is especially true if your PC happens to be infected by pests such as

A personal software firewall improves online security, even when used in conjunction with a NAT router

spyware. These tools often work by 'phoning home' – collecting information from your system, and then forwarding it to a server on the Internet without your knowledge.

Spyware programs are usually installed based on a request you've made (opening an infectious Web page, for example), so port blocking does nothing to stop them. Similarly, most spyware pests are cleverly designed to use common port numbers for their outbound communications, so using your router's access control settings to limit outbound traffic is generally of little help. This is why we suggest that you not rely on port blocking as the only firewall-type protection for your system. Use port blocking as your first layer of defence, then install personal firewall software on your PCs to double-up your security strength while more fully addressing the dangers associated with ills such as spyware.
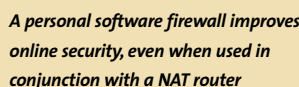
want to consider adding another layer of defence to your security approach when using a NAT router, as outlined in the boxout.

Into the firmware
Regardless of whether you've just purchased your hardware router or have been using it for years, it's absolutely crucial to key an eye open for firmware updates. Your router's firmware is not unlike a computer's Operating System – the software component that makes the hardware run. In the same way that Microsoft issues patches and updates to add features or address security threats in its Operating Systems, router vendors similarly release updated firmware versions that do much the same thing. If your router doesn't function in stealth mode now, it may after a firmware upgrade, for example.

The upgrade process isn't as simple as using tools such as Windows Update, but it isn't all that

difficult. Begin by accessing your router's management interface and search out the current firmware version – often a long number such as 4.1.0023 or similar. Then, head to the manufacturer's Web site, seek out the support page for your model, and look for the update. If the current version is newer than yours, download it to your hard drive. In some cases, you'll need a special utility to update the firmware, but newer models typically include a feature that lets you browse for the file and then install it in a manner not unlike adding an attachment to an email message.

A new route to happiness
Once the upgrade is complete, dig through the management interface looking for new features, and take the time to test its security with the online scanning tools we've looked at here. With a little luck, your router will be better than new, especially on the security front. ■

Patches & updates

If you protect your system properly, spyware and malware won't stand a chance. Caroline Lyons recommends some tools that'll ensure your PC protection is up to date

Ad-Aware SE Personal Build 1.05

Ad-Aware SE Personal is a comprehensive spyware removal tool that's regularly updated to identify new malware threats in the wild. The latest definitions file includes protection for an additional seven CoolWebSearch infections. It also identifies the presence of Win32. TrojanDownloader.Swizzor.br that's a Lop.com variant known to be installed with *Messenger Plus*. This Trojan comprises a Browser Helper Object (BHO) that attempts to execute malicious files discreetly. *Ad-Aware SE Personal* includes a built-in updater, but the definitions can be downloaded via **http://download.lavasoft. de.edgesuite.net/public/defs.zip**.

*Tweak **Ad-Aware SE Personal** settings to minimise re-infection of spyware when the computer is restarted*

Simply extract the file to the Lavasoft folder and restart *Ad-Aware*. To maximise removal of infected files and Registry entries, click Tools -> Tweak. Then in the Scanning Engine section tick 'Unload recognized processes & modules during scan' and 'Scan Registry for all users instead of current user only'. Scroll down to the Cleaning Engine, tick the first five entries and press Proceed to save your settings.
www.lavasoft.de

AVG Free Version

The latest priority update for *AVG* includes identification of the W32. Kelvir worm transmitted via *MSN Messenger* by accepting a file. If detected, choose to delete the infected file to reduce the risk of re-infection. Despite *AVG* being capable

of trapping this worm, it may disable System Restore in its wake. If this is the case, click Start -> Run, type regedit and press [Return]. Navigate to
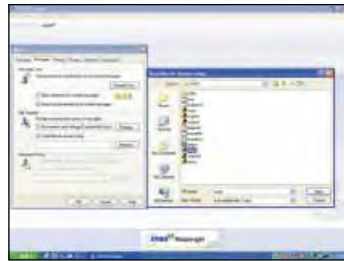
*Configure **AVG** to scan **MSN Messenger** file transfers to maximise protection against new virus threats*

HKEY_LOCAL_MACHINE\SOFTWARE\ Policies\Microsoft\Windows NT\ SystemRestore and delete DisableConfig and DisableSR. Ensure file transfers are scanned using the *AVG* scanning engine. Click Tools -> Options -> Messages, tick 'Scan files for viruses using' and click the Browse button to navigate to the Grisoft folder. Select Avgw.exe, press Apply and OK. For ultimate protection, block file transfers via the Registry. Navigate to HKEY_LOCAL_MACHINE\Software\ Policies\Microsoft\ and click Edit -> New -> Key and name it Messenger. Create another subkey Client then a new DWORD 'DisableFileTransfer' with a value of 1.
www.grisoft.com

CWShredder Version 2.14

CWShredder is a dedicated removal tool to eradicate CoolWeb Search variants not identified by anti-virus or anti-spyware software. This type of infection has a payload similar to a backdoor Trojan, is capable of evading other security software and is impossible to remove manually. The malware exploits the ByteCode Verifier vulnerability in Microsoft's *Java Virtual Machine*. The preferred deterrent is to use *Sun Java* from **http://java.sun.com/getjava/index. html** instead of *Java VM*. Some variants also prevent users running the tool and if this occurs, run *CoolWWW.Smark.Killer Remover* from

www.safer-networking.org/files/ delcwssk.zip. Despite *CWShredder* now being incorporated with *SpySubtract Pro*, a free standalone version is still available for download. To run the tool, double-click CWShredder.exe and click Run if asked if this file should be executed. Click Fix and press OK when the *Internet Explorer* and *Windows Media Player* dialog appears to close the applications automatically. Restart the computer for changes to take effect.
www.intermute.com/products/ cwshredder.html

Trojan Remover 6.3.6

Trojan Remover scans your system at startup for the presence of malicious Trojan files. The latest database includes detection of the W32.Sumom worm transmitted via *MSN Messenger*. This worm also spreads via CD-Rs by adding malicious files to the CD Burning cache. Navigate to C:\ Documents and Settings\{Username}\ Local Settings\Application Data\ Microsoft\CD Burning and delete Autorun.exe and the randomly named JPG or PIF file, if present. W32.Sumom also disables System Restore as part of its payload. To restore, navigate to HKEY_LOCAL_MACHINE\SOFTWARE\ Policies\Microsoft\Windows NT\ SystemRestore and delete 'DisableConfig' and 'DisableSR'. Three new utilities have been added, which include a Hosts file restoration tool that should be used if a W32.Sumom infection is detected. The Layered Service Provider (LSP) stack repair tool restores Registry entries if Internet connectivity is lost during removal of spyware. The Reset Windows Update tool checks Windows Update settings in case malware has inhibited access.
www.simplysup.com ■

*Trojan Remover **incorporates essential tools to restore settings modified by Trojans***

Windows Update

Stay safely up to date with Microsoft

Microsoft releases monthly security-related updates via the Windows Update Web site **http:// v5.windowsupdate.microsoft. com/v5consumer/default.aspx? ln=en-us**. You can get archived critical updates for Windows 98 from **http://www.microsoft.com/ windows98/downloads/corporate .asp**. Windows Me introduced an Automatic Updates feature that is configured to check for updates every 24 hours when an Internet connection is established. The default setting automatically downloads updates and notifies you via a System Tray balloon, but it can be customised via control Panel -> Automatic Updates.

The Automatic Updates feature is also included with Windows XP and is enabled by default, accessible via Start -> All Programs -> Windows Update. Version 5 uses advanced features to ensure only applicable updates are delivered, with optional Express or Custom installation. Updates are prioritised depending on the security risk and are categorised as High Priority and optional software and hardware. Express Install (recommended) only displays high-priority updates and requires minimal user-interaction. Custom Install generates a list of all updates, including optional components, but involves reviewing each update prior to installation. If SP2 is installed, Automatic Updates can be configured through the Security Center. Double-click the System Tray icon and select Manage security settings for Automatic Updates.

On the CD

TREVOR WITT
CD Editor

If you have a query about using your disc's interface or its content, please visit our reader support Web site at **www.futurenet.co.uk/support/** where you can find solutions to many common problems. If you're still experiencing difficulties, then please email our reader support team (support@futurenet.co.uk) for further assistance, or call 01225 442244 and ask for CD support.

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Steganos Internet Anonym 6

As we all know, the Internet isn't a safe place any more – if it ever was, that is. However, there are ways to stop the hackers, spammers and virus writers getting their hands on your PC, such as Internet Anonym from Steganos   **PAGE 138**

CyberScrub v.3.0

Whether you spend five minutes or five hours online, you build up a trace of where you've been. CyberScrub helps you clear those footprints so that no one can see them   **PAGE 139**

Internet Business Promoter 4.1.5

Building a Web site is great fun, especially as you watch people come and visit. However, if your hits are low then Internet Business Promoter is the program for you, as it'll help draw more people to your site than ever before   **PAGE 140**

WinSpeedUp

As we all spend so much of our time using computers, wouldn't it be nice if they worked a little bit faster? Well, with WinSpeedUp that's what you get – a faster PC   **PAGE 141**

XP-Tuner

Whether you clean out all the unnecessary files on your system or remove unwanted programs from the startup folder, XP-Tuner will help you get more from your PC   **PAGE 141**

ORBITER 2005

This is no ordinary flight sim game. In fact, it's not really a game at all. This is a serious and highly detailed, in-depth Space Shuttle sim.   **PAGE 142**

HIDE YOUR INTERNET TRACKS
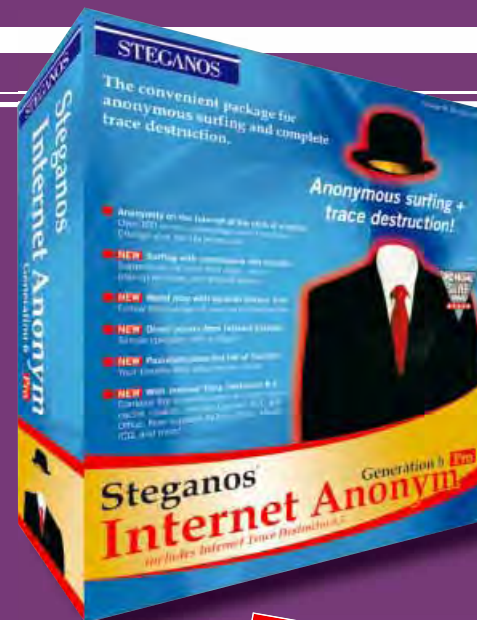
'Internet Anonym can make you so anonymous that even you won't know who you are' **138**

FLY THE SPACE SHUTTLE

'ORBITER is far from being a game – here, realistic simulation is the order of the day' **142**

Steganos Anonym Pro 6

Don't want your IP address tracked? We play proxy roulette

After a long night surfing both the dark and light side of the Web, your computer will be stocked to the gills with saved files and logged information that others can use to follow in your footsteps at a later date. Of course, even the most basic Web browser enables you to clear up after yourself by wiping the history, zapping cookies and emptying your cache files. Having done all this, most people feel safe that their browsing trails are covered.

Wrong. That's only half the story: you've left a trail brighter than a Cambridge PhD student after a night out, because each time you visit a server it stores a slew of information about you in its log files. Your IP address, the time of your visit, the page you asked for, the name of the browser you were using – even the URL of the previous Web page you visited is stored.

Is this your idea of security? Do you really want the world to know all this about you and more? *Steganos Internet Anonym*, a full copy of which is on this month's cover disc, can make you so anonymous that even you won't know who you are. Once you've installed it, go

to **www.steganos.com/magazine/ pcanswers/siapro6** to receive your free serial number and unlock the program – otherwise it'll expire in seven days.

→ **STEP-BY-STEP GUIDE**

Secure surfing with Steganos

It's easy, not annoying, to be anonymous

01 This is the main *Steganos* window and a gateway to its options, but also where you activate anonymous surfing. Click the button Surf Anonymously to enable it and on the right you'll see a world map indicating where your current proxy server is – this is what makes you anonymous, redirecting a signal from another location.


02 Under the Comfort & Security link are options to strip out unwanted data about yourself. Your IP address is handled by the Surf Anonymously option, but here you can also choose to remove your browser name and referer URL, as well as preventing pop-up windows. Leave Cookies on, though, or sites might break.
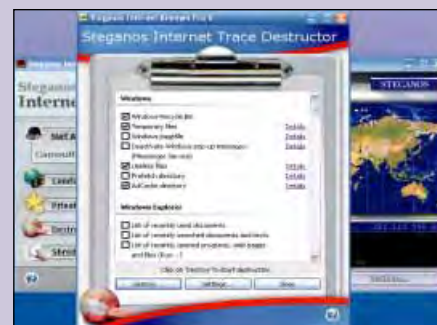
03 *Internet Anonym* shows its real power under the Destroy Traces link. This makes it possible for you to play with a whole host of options including removing all your Web browser's cached data, and preventing error reporting to Microsoft. You can also delete your recent file list in *Office* and clear up useless files to save space.

04 Want to delete files securely, so no canny undeleter can recover them? *Steganos* has that too. Click the Shredder link from the menu, then select the files you want to consign to oblivion. Under the Settings button you can change security level – select the Gutmann method for FBI-strength security
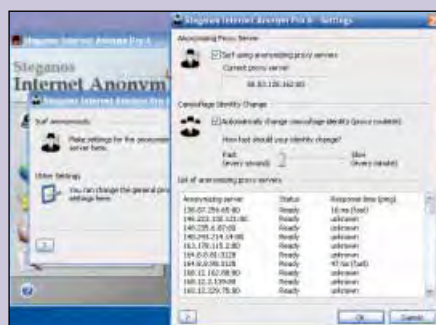
05 When you start surfing anonymously, the service will be slow for a little time while *Steganos* tries out various worldwide servers to see which are fastest. You can then tweak how often to change your IP address under the Settings link and then increase this if you want more speed.

06 To ensure you're running silent, click the Check Anonymity link. This loads up a Web page on the Steganos site, which prints out all the information that can be detected about you and your Internet connection – everything you see there is what can be seen by other Web servers, so make sure it's clean!

→ **PUBLISHER:** CYBERSCRUB LLC **CONTACT:** WWW.CYBERSCRUB.COM
SUPPORT: HTTP://BUY.CYBERSCRUB.COM/INFO/INDEX.PHP
SYSTEM REQUIREMENTS: WINDOWS 98, ME, NT, 2000, XP
LIMITATIONS: FULL PRODUCT AS SOLD FOR £26

CyberScrub v3.0

With this useful application you can securely remove files and application logs to help guard your privacy

Your privacy is one of your most valuable assets, so it's somewhat surprising that many computer users leave such a trail of revealing information on their hard drives. Your Internet browser keeps a record of all of the sites you've visited. Countless programs provide MRU lists revealing which files you've been working with. Then there are your files themselves. When you've finished with a file, simply deleting it using Windows is not good enough – there are countless recovery applications on the market which can restore a deleted file to its former glory.

Nothing to see here

Enter *CyberScrub*, which can rid your hard drive of all traces of your computing activities. As well as opting to delete individual files and folders from your hard drive, you can also wipe the free space of your hard drive to ensure that data recovery is simply not possible. The program can analyse the space that's marked as 'free' and overwrite any previously deleted files. Any sectors of your drive that are only partially occupied can also have their free areas wiped.

When it comes to wiping, there are a huge number of methods for you to choose from. At its most basic, you can opt to perform a one-pass wipe, which overwrites data only once. This method is very quick to perform and will stop most standard data recovery tools in their tracks, but is not sufficient to counter more advanced recovery software. A halfway-house option sees information overwritten with random data three times, which is enough to stop all but the most sophisticated of recovery tools. Finally, you can select one of the super-secure options, which overwrites data between seven and 35 times, completely obliterating all traces.

The Privacy Guard feature of the program enables you to quickly and easily cover the data trail you leave behind as you use your computer. As well as your Web browser, many of the programs you have installed keep records of how they've been used and *CyberScrub* can delete these for you. In addition, you can remove details of the searches you've conducted, files and computers you've accessed, remove temporary files created by applications and clear your Run history. Importantly, you can also clean out Windows' paging file, which can contain a raft of information.

Emails gone for good

The emails you send and receive probably contain information you'd rather nobody else could access and as such, *CyberScrub* provides information on how you can remove emails from your preferred email client, so that they're are stored in one area of your hard drive. You can then use the Erase For Good facility to render these emails unrecoverable.

CyberScrub's startup screen provides easy access to the most frequently used components of the program

The first time you run the program you'll be prompted to enter your name and email address as part of the registration process. This done, you're up and running and ready to start securing your privacy. With *CyberScrub* installed on your computer, you can rest safe in the knowledge that the files you remove from your hard drive stay deleted.

→ **QUICK TIPS**

Securing your privacy with CyberScrub

Three easy ways to hide your past...

→ **To ensure none of your previously deleted files can be recovered, select the first option from the startup screen. Select the drive you'd like to secure and select your options. You can change the wipe method used by clicking the Erase Settings button and choosing from a quick one-pass scrub, up to a 35-pass Gutmann scrub.**
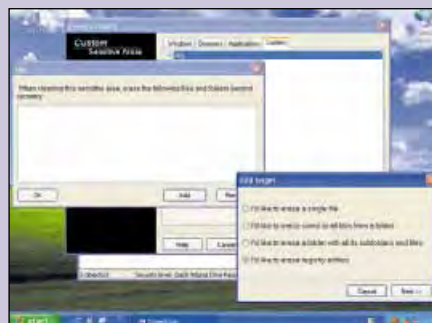
→ **Use Privacy Guard to remove traces of online and offline activities. From the main window, click Privacy -> Next. Work your way through the tabs and select the options relating to what you'd like to remove. To clear a Registry entry or folder, click the Custom tab, then Add. Enter a name for the entry and select your options.**

→ **To ensure your deleted emails can't be recovered, click the Deleted E-mail toolbar button. Follow the standard deletion steps for your email client and click Next. After deletion, compact your mail folder and click Next. At the final screen of the wizard make sure that the Erase For Good option is selected and then click Finish.**

Internet Business Promoter 4.1.5

Promote your Web site for maximum compatibility with search engines, to gain a longed-for increase in hits

Getting a Web site up and running is an enjoyable experience and a great deal of pleasure can be gained from seeing your creation online. However, putting your site online is only half of the story. The next step is ensure people visit it.

This is where *Internet Business Promoter 4.1.5* comes in. The suite comprises ten individual tools that have been designed to give your site the highest possible ranking in a wide range of search engines. The Top 10 Optimizer can advise you what changes you need to make to your site and its keywords to ensure that you appear in the all-important top ten of search results. You can quickly find out the top ten search results from scores of search engines using keywords of your choice. You can then compare the top-ranking sites with your own, and a report will advise you of any optimisation tips you may be able to use to improve your ranking.

There are a number of tools that can be used to submit your site to dozens of search engines. The first is a fully automated process, while the semi-automatic process caters for any search engines that require submissions to be validated. The program also enables you to submit your site to Web directories – just select the most suitable category and you're away.

Once your site has made its way into search engine results, you can use the Ranking Checker to keep an eye on how you are faring in various engines. This is a quick and easy way to find out which search engines are producing the best results for you.

Use **Internet Business Promoter's** *powerful tools to analyse your own Web site and improve your position in search engine results*

Internet Business Promoter can also help you ensure you are using the most suitable keywords in your coding, whereas the Keyword Density Analyzer checks that your keywords appear in the right number of times so that you're not overlooked by search engines for 'keyword stuffing'.

Another useful tool is Search Engine Spider Simulator, which can analyse your pages in the same way as Web spiders. You can see what information these spiders see and which sections of your site and code are ignored, then make the relevant changes to improve your search positioning. All of the tools can generate detailed reports in plain text, *Word*, PDF or HTML format.

Before you can use the program you'll need to obtain a registration code. Pay a visit to **www.axandra. com/magazine-special-offer**, enter your name and email address and a code will be sent to you immediately. Run the program, go through the welcome screen, then click Help -> Enter Unlock Code.

→ UPGRADE

Version 8 of *Internet Business Promoter* includes a range of enhancements and features to improve the ranking of your Web site. The tweaked optimising tools provide you with more detailed information about how to boost your site and the Popularity Improver helps to increase traffic by suggesting other Web sites to link to and from. The Web Site Optimization Editor checks that all of the relevant metatags and page elements are in place with just a few clicks of the mouse.

To buy or find out more about the program, visit **www. axandra.com**. *Internet Business Promoter 8* is available as a Standard edition for small businesses for just $180 (around £95), or as a Business edition for larger organisation for $350 (around £184).

→ STEP-BY-STEP GUIDE

# Seeking search engines
Submitting to search engines is one way to increase Internet promotion

01 **Run the program, enter the address of your Web site, click Next and select your** connection speed. You can then search terms that are relevant to your site, and they'll be used to test your site's ranking with search engines.

02 **Click Search Engine Submitter on the main screen, then Next. Select your site, click Edit** and fill in the information requested of you. Back at the main screen, select the search engines you're interested in and click Next to start submitting.
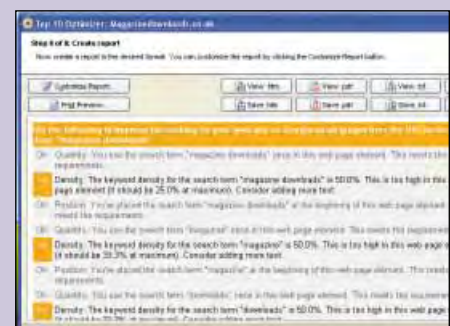
03 **Click the Top 10 Optimizer button. Select your Web site and specify the search engine** you want to query. Enter keywords and click Next. Select any of the top ten listings that are displayed, click Next and choose your analysis options.

XP-Tuner

Make Windows XP faster and more stable with this excellent tweaking tool

There's a wealth of options available within XP-Tuner *that'll enable you to boost the performance of both your Operating System and PC*

Windows XP is generally solid, but when you use your PC a lot, download many files and regularly install and uninstall software, the resources can become cluttered. As a result, your system might slow down and become instable. *XP-Tuner* will help you get the most out of the OS again. It includes hundreds of different options to clean up your system and to optimise your Internet connection. For example, it can increase your PC's memory by removing unnecessary applications and Windows features from your hard drive as well as entries in the Registry.

Your PC's performance might also be affected by a full Internet cache, hundreds of cookies and a long URL history, and *XP-Tuner* can get rid of these traces, too. There are also options to adjust *Internet Explorer's*

→ UPGRADING

If you found *XP-Tuner* useful, why not upgrade to *XP-Tuner PRO*, the new version, which includes many more tweaking options? Visit **www.neikeisoft.de/ Dshareware.html** to download the shareware version and **www. s-a-d.de** to buy the standard version for €20 (around £14).

settings and obtain specific information about your system.

Ease of use

XP-Tuner is incredibly easy to use. There are four different wizards that help you optimise your PC automatically and plenty of reports to read to gain a clearer picture of how your system has been improved.

Four wizards help you to adjust settings, and you can view data about your system

WinSpeedUp

It's time to knuckle down and optimise your system for super-speedy results

The 'Settings Freeze' feature in WinSpeedUp *enables you to alter settings within Windows and then turn back the clock should the new settings fail to live up to your expectations*

The more programs you pile on to your PC the slower it becomes, but with Script Soft's *WinSpeedUp* you can tune and optimise your Windows package to get the most out of your PC. With access to Windows' hidden system options via *WinSpeedUp*, programs can start faster, unnecessary files can be deleted, Internet and LAN connections are boosted, the system boot is accelerated, and your PC will become stable when using more than one program at a time.

Privacy is essential

WinSpeedUp's Clean up functions enable you to maintain your privacy by erasing your computing tracks and in the process free up some precious hard drive space. The program empties the Recycle bin, deletes cookies, resets the history and

→ UPGRADING

If you can't squeeze quite enough speed out of your Windows package then try downloading updates. At **www.winspeedup.com** you can update your *WinSpeedUp* product, though you will have to uninstall any previous versions before downloading the new one, any unlock code will be saved.

documents lists, erases your *Internet Explorer* cache, deletes temporary files, and gets rid of unnecessary files that clog up your system.

You also have one-click access to Windows Clean up utilities such as scandisk and defragmenter. In addition, the RAM Cleanup function frees the physical memory from unnecessary entries.
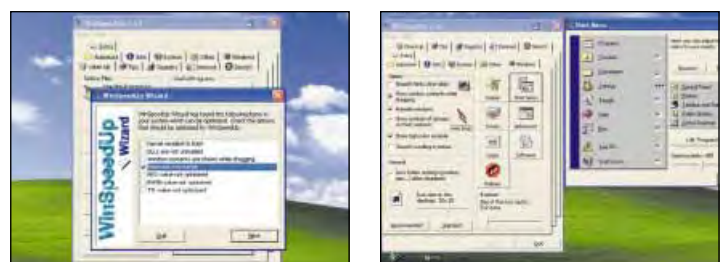
WinSpeedup *enables you to alter aspects of your system, such as the display options*

→ **DEVELOPER:** MARTIN SCHWEIGER **CONTACT:** WWW.ORBITERSIM.COM **SUPPORT:** WWW.MEDPHYS.UCL.AC.UK/~MARTINS/ORBIT/FAQ.HTML
SYSTEM REQUIREMENTS: WINDOWS 98, ME, 2000, XP **LIMITATIONS:** NONE, FULL PROGRAM

ORBITER 2005

Take control of a variety of spacecraft in this highly realistic flight simulator

Serious flight simulators have been found on the PC for many years and there are a number of reasons behind this. The raw computing power and the pace at which advances are made means that ever more complex simulations with increasing levels of realism are possible. Step onto the flight deck of any aeroplane and the number of controls available to the pilot is staggering, which is precisely why a PC with a multi-keyed keyboard is an ideal tool.

ORBITER is a flight sim of sorts, but it's wildly different from anything the majority of people will have tried in the past. Unlike other simulators, ORBITER is far from being a game – here, realistic simulation is the order of the day. Furthermore, rather than the more traditional planes and helicopters, you're placed at the helm of a variety of spacecraft in this simulator, ranging from the space shuttle Atlantis to the Hubble Space Telescope.

With the emphasis placed on realism, ORBITER is not a program you can jump straight into. You're not playing a modern version of Space
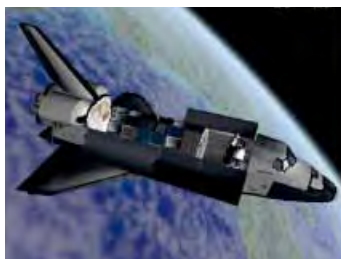
If you've ever fancied jetting off into space, ORBITER is the flight sim for you

Invaders; you're dealing with spacecraft that has complicated control mechanisms, as well as fighting against the forces of gravity and the laws of physics. As such, before you delve into your first space mission it's a good idea to take some time to read your way through the manual. This essential guide is provided in PDF format and weighs in at over 100 pages.

Read the manual

Don't be tempted to skip the manual. In it you'll find an indispensable guide to control the craft on offer – something you're not going to learn by trial and error. The manual is included

with the program, but the installation process is somewhat different from other programs. On this month's cover disc you'll find three .zip files: one for the main program, one containing a set of textures, and the final one comprising program updates. When you extract the files, it's important to retain the folder structure.

Create a folder called Orbiter somewhere on your hard drive and extract the contents of orbiter050116_base.zip to it. Now extract the contents of orbiter050116_htex.zip into the same folder.
Finally, you'll need to extract orbiter050216patch_base.zip in the same way. You'll be asked if you want to replace existing files and when this happens you need to click Yes To All.

With all of the files extracted, you'll find the all-important manual in the Docs sub-directory of the folder you created. There are also detailed control guides for some of the more complicated craft, which include information about how to interpret different displays. When you're ready to start experimenting with the

→ UPGRADING

Keeping up to date
ORBITER is provided completely free of charge, the project being the hobby of Martin Schweiger, and there's no strict release schedule. That said, the program does see a number of updates added from time to time, so it's well worth paying a visit to **www. orbitersim.com** to see if any new patches or missions have been added. You'll also find links to ORBITER Web sites offering add-ons to further enhance the simulator. In addition, there's a very active Web forum where you can share your experiences and ideas with other ORBITER users.

program, launch the orbiter.exe file in the folder you extracted the files to. You can then choose the scenario and craft you'd like to fly and try your hand at space flight. As the ORBITER Web site warns, the learning curve is steep, but it's also a great deal of fun.

→ STEP-BY-STEP GUIDE

Take to the stars with ORBITER 2005

You're only a few configuration screens away from piloting the spacecraft of your choice

01 With all of the program files extracted, open the folder you've created and double-click orbiter.exe. Click the Visual Effects tab and you can configure the program to best suit the power of your PC and graphics card.

02 Moving to the Video tab you can choose between running ORBITER in full-screen mode or in a window. In full screen, there are a number of preset resolutions to choose from, and you can also set the colour depth according to the speed of your PC.

03 On the Scenario tab you can choose the spacecraft you'd like to fly. The view you're presented with depends on the scenario you choose. Most craft can be controlled using the number pad and you can view additional craft information by pressing [Ctrl] + [F4].